

June  
1934

# Electrical Contracting

*With Which Is Consolidated*  
**The Electragist and Electrical Record**



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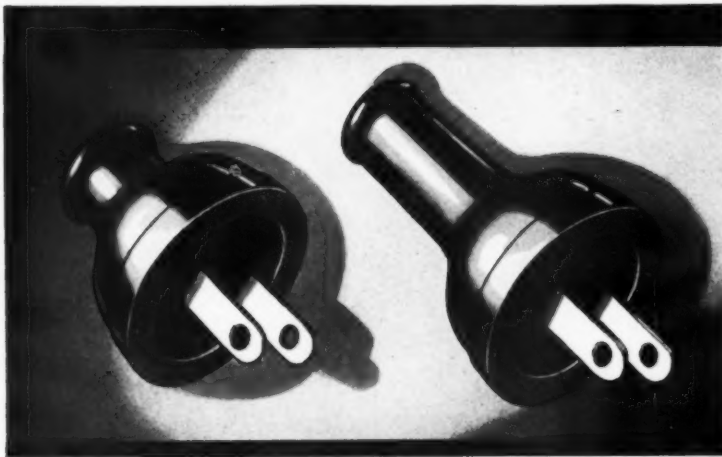
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... a feather  in every  
**BRYANT CAP...**

**A BRYANT CAP FOR  
EVERY APPLICATION**

**ADD THE FINISHING TOUCH OF QUALITY TO NEW WORK OR REPAIRS**



THE SELECTION OF BRYANT CAPS FOR HIGH GRADE APPLICATIONS IS IN ITSELF THE BESTOWAL OF THE MARK OF MERIT. SIMILARLY, BRYANT CAPS ADD PRESTIGE AND SALABILITY TO APPLICATIONS WHERE THEY ARE USED. A TYPE FOR EVERY REQUIREMENT IS AVAILABLE.

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The Bryant two-piece Rubber Cap has many unique features to meet the requirements of high grade applications. The use of Bryant Rubber Caps for repairs will bring more repair business on additional appliances. Chief among the exclusive Bryant features are:

Completely enclosed terminals.  
"Shock-Proof", both electrically  
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Strain relief slots in disc.  
(Patent applied for) Unnecessary  
to thread wire.

Easy to assemble and take apart.  
Will not separate accidentally.

Three cord hole sizes, each one  
having unique inside lip to take  
a wide range of wire sizes.



**BRYANT** *Superior Wiring Devices*  
Manufactured by THE BRYANT ELECTRIC CO., Bridgeport, Conn.

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NUMBER 8

# electrical contracting

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*That all churchgoers  
may hear...* **SELL CHURCHES**

## RCA Victor Sound Systems

Or, to express it from your standpoint—that you may collect some very nice business, **SELL** churches RCA Victor Sound Systems.

If there ever were ready-made situations, whose very character demanded sound reenforcing, they are the churches. Folks come to church to hear, principally. Yet many a church, large or small, is unsatisfactory acoustically, because of the inside stone work, or the vocal characteristics of the minister, or the hearing ability of many members of the congregation.

The sound application goes further than in the church alone. Sunday schools are being equipped with public address apparatus, record

reproducers, and speaker systems for distribution of the church service.

In other words there's a real market here, and in the early summer months is the time to go after it. RCA Victor direct mail advertising will back you up in June. RCA Victor engineering advice is yours for the asking.

And most important, RCA Victor is sold on the idea that this business—sound business in general—is yours to **SELL** as well as install. If you haven't yet made contact with us, or the RCA Victor Distributor in your territory, make it a point to do so. Let's get together and go places for profit!



### RCA VICTOR CO., Inc.

CENTRALIZED SOUND SECTION, CAMDEN, NEW JERSEY



A neat little folder entitled "That All Who Come May Hear", telling the story about RCA Victor Sound Systems for churches, may be had in quantity. Use them for your church prospects.

RCA Victor Sound Systems are available for every conceivable purpose. Write for information about any or all of the following: →

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

- ☐ Centralized Radio
- ☐ Sound Reenforcing
- ☐ Simplified Antenna Systems
- ☐ Public Address



# House Wiring

A NEW phase of the growth of the electrical industry is now opening up—the redevelopment of the residential market. Will it be developed intelligently through the coordinated efforts of all branches of the electrical industry or will the work be done without a plan beyond the needs of the moment?

WHEN the residential market was first tackled the utilities had but one idea—get service into as many homes as possible. Naturally, some strange ideas came out of such a program such as the one-meter-one-lamp-one-flatiron-outlet job.

This kind of thinking resulted in campaign selling, cut prices, cheap fixtures, inadequate wiring. The public was left with the feeling that all it needed was service. There was no degree of adequacy.

As everyone knows the industry, as a whole, has paid heavily for that short-sighted policy. The utilities have perhaps been the worst sufferers of their own folly for not only have they limited their opportunity to increase the consumption from their customers, but they paid money to get customers that have ever since been served at a loss.

And now, of course, the condition is even worse because of the wave of rate reductions—reductions in the top rate.

THE economics of the case demand that the one stable form of customer be truly stable, i. e., the residential customer. He cannot be stable unless the

revenue from the top rate is small in comparison with the revenue from the lower brackets. To bring such a condition about we need more and lower promotional rates and coordinated industry selling.

There is no limit to which we can go in the development of this market if we all work together. The contractor who knows price only will not get very far with a public that has been educated to demand certain advantages. In other words, we can make salesmen out of each other at the same time that we are creating a public demand.

THE market, of course, is both new and old homes. The former is more simple to sell but up until the depression very little constructive selling was done.

The old home offers a more difficult problem but why not plan it out? The first attack is probably going to be the range and then the water heater. This will take a certain size service. Instead of installing the smallest to take care of range and heater, why not install one with 100 per cent excess capacity?

If we do this job now it will make air conditioning, space heating and other demands easier to take care of when they arise.

However, we are never going to make the speed and progress that is possible unless we all approach the market in the same direction. What that is can be found out only by joint conference.

The residential market is a gold mine for the entire electrical industry if handled right. Its development should not be left to any single branch of the industry.

# *Jobs* are there for alert electrical contractors



PUBLIC BUILDINGS



HOUSING PROJECTS



SCHOOLS



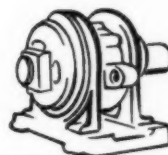
HOSPITALS

**T**HE construction industry is coming back to life. For the first time in years, sizeable funds are being made available for construction projects large and small, public and private. These projects mean more and more jobs for electrical contractors if they go out after these jobs.

The contractor's opportunities will be varied in scope. It may be a simple remodelling job. Or it may be a large scale public building project.

Naturally, electrical equipment will be needed. Quickly and economically. The contractor must have a dependable source of supply, geared to his needs.

Graybar fulfills this need. It brings to electrical contractors an experienced service of supply equal to any requirement and including anything and everything electrical. It brings, too, a 65 year old reputation for dependable materials—a reputation that will back up the reliable contractor's own good reputation.



MOTORS



LIGHTING FIXTURES



SIGNALLING



WIRE AND CONDUIT



**GraybaR**  
ELECTRIC COMPANY



OFFICES IN 73 PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BUILDING, NEW YORK, N. Y.

VOLUME 33  
NUMBER 8

# electrical contracting

WITH WHICH IS CONSOLIDATED ELECTRICAL RECORD

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1934

## how DODGE CITY LOST IT'S BAD NAME

by John Wise



At one time, Dodge City, Kansas, had such a rep for rough stuff its disgusted citizens began to believe that, compared to their town, Babylon must have been a quiet village with a nine o'clock curfew. Dodge's great prosperity and thousands of law-abiding people rated little space in the papers, but the wild didoes of her hooligans were front page stuff everywhere.

Finally, the city fathers consulted a newcomer, a two-gun professional peace-officer named Wyatt Earp, who wasted neither words nor bullets. "Your town's O.K.," he opined, "But you're standing around with your hands down, letting a few rotten apples spoil the whole barrel. What you need is some good advertising in place of the sour stuff you're getting. Make me Marshal, and I'll show you what I mean."

So they gave Mr. Earp a badge and 100 Vigilantes, neither of which he seemed to need. He just went around making the hoodlums look ridiculous, slapping 'em down singly, heaving 'em in the can in bunches and deftly drilling the misguided few who insisted on a showdown. But all this socking, jailing and occasional execution was only a small part of his plan. Every tough mug he ran out of town became a walking advertisement for law and order in Earp's adopted city. "Tell 'em you just came from Dodge," he would say to the battered exiles, and they would spread the news that the city with a bad name was really a Sunday School community. The delighted citizens also broadcasted the clean-as-a-daisy stuff, and soon the better element of settlers came flocking in.

Now, take the electrical contractors. Get a load of the Anvil Chorus, in which, sad to say, we ourselves often join. Yep, we're just a bunch of chiselers, price-cutters, poor credit-risks and what else have you? We can't sell, we don't know how to buy, our brains are dusty from misuse, and our pants are shiny from sitting in swivel-chairs, waiting for Santa Claus.

What a laugh! Sure, there are bad practices in our industry, as in others. But they come mostly from an element which represents less than 20 per cent of the volume of the industry. This is unfair, because, for instance, when we think of the steel industry, we visualize the successful 80 per cent, not the junk dealers at the lower end.

Prop this up on your desk, where you can see it. The electrical contracting industry, which developed to a maximum of \$600,000,000 in one year, never got that way by shyster practices. So let's quit moaning, flap our wings, and do a little crowing.

COCK-A-DOODLE-DOO!

# The Machinery for Administering the Electrical Contractors' Code

By L. E. Mayer

President, National Electrical Contractors Association  
Chairman Code Authority, Electrical Contracting Division  
of the Construction Industry

THE machinery for the administration of the Electrical Contractors' Code of Fair Competition is rapidly taking form and is already beginning to percolate down into the local territories.

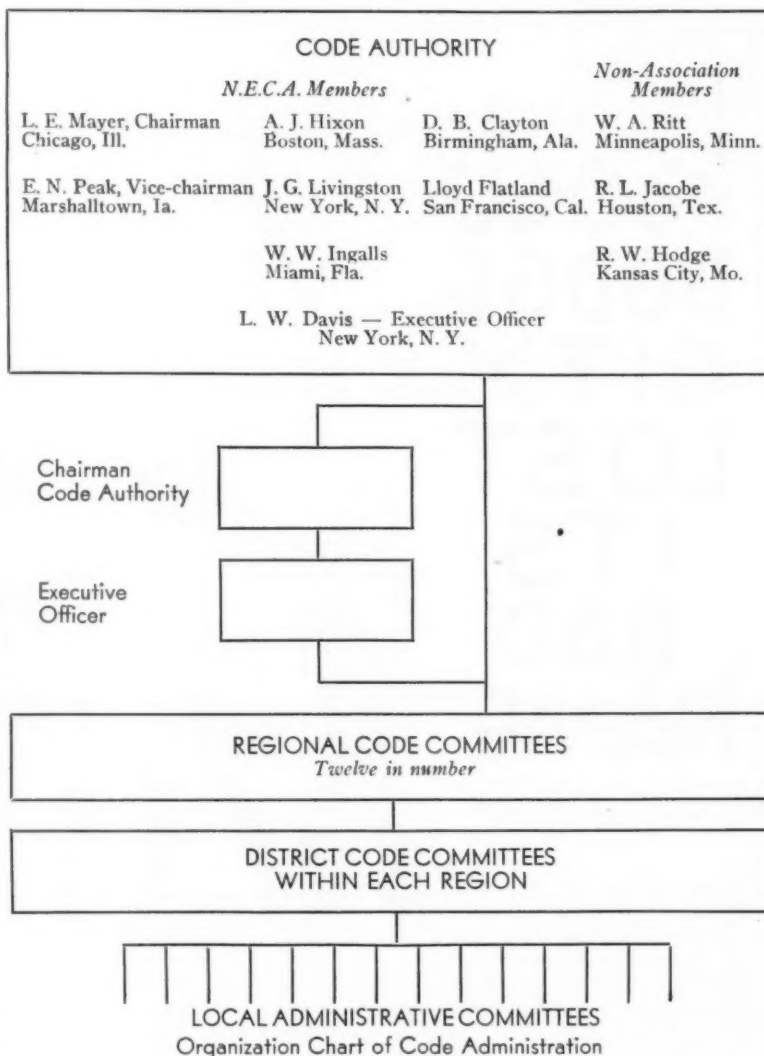
Of necessity the beginning of the administrative work was in the organizing of the Divisional Code Authority which is provided for in the code and to which is delegated by the Administration the responsibility for administering the code. This Code Authority is composed of ten members, seven of whom are members of the National Electrical Contractors Association and three of whom are non-members but who were nominated by the executive committee, N.E.C.A., for appointment by the Administration.

The Code Authority is responsible for the enforcement of all provisions relating to fair competition and bidding, but not the enforcement of the labor provisions insofar as area agreements are concerned.

The office of the Code Authority is located at the headquarters of the National Electrical Contractors Association, 420 Lexington Avenue, New York City, and L. W. Davis, general manager of the association, is the executive officer for the Code Authority. This action was taken instead of setting up separate offices and staff, not only in the interest of economy, but also because the association staff was familiar with the code and is in a position to start work at once, whereas a new staff would involve considerable delay.

After the first two or three meetings the Code Authority will probably not meet more often than three or four times a year. Between meetings the chairman will act for the Code Authority. His address is 569 W. Van Buren Street, Chicago, Ill.

A number of committees have been

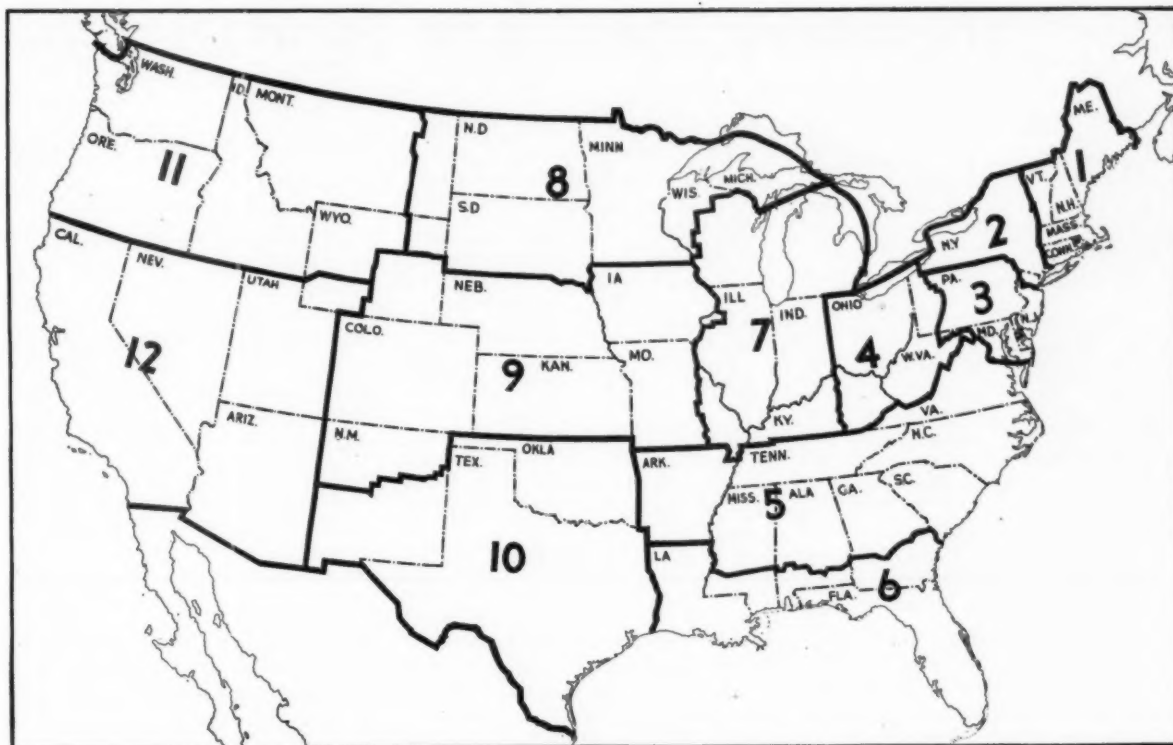


set up for the purpose of facilitating the work as follows: Executive, finance, statistics and reports and labor policy.

The labor policy committee was appointed for the purpose of maintaining relations with organized labor which is essential and necessary in the promotion of the code.

To administer this code for an industry with more than twenty thousand operating units is going to require no small amount of money. A tentative budget has been prepared with the thought at all times to be as economical as possible. The budget is now in the hands of the administration in Washington. When it shall





MAP SHOWING BOUNDARIES OF TWELVE CODE REGIONS

Each region, which is composed of several districts, has a chairman chosen by the Code Authority. This chairman, together with the chairmen of each of the district code committees, constitute the regional code committee. Following is a complete list as we go to press of the membership of the regional code committees. The numbers in front of the committee members names refer to the district of which they are chairmen.

- |  |  |   |  |  |  |
|--|--|---|--|--|--|
| <b>Region No. 1.</b><br>A. J. Hixon,<br>Chairman.<br>22 Elkins St.,<br>Boston, Mass. | 10. J. S. Nielsen,<br>26 Center St.,<br>New Haven,<br>Conn.  | 4. (Not selected.)<br>5. (Not selected.)<br>6. R. S. Glover,<br>4th & Orange<br>Sts.,<br>Wilmington, Del. | 5. Jos. A. Over-<br>meyer,<br>118 Huron St.,<br>Toledo, Ohio.                                | 4. J. M. Clayton,<br>78 Simpson St.,<br>N. W.,<br>Atlanta, Ga.   | 6. I. G. Marks,<br>323 Chartres St.,<br>New Orleans, La.                                       |
| 1. L. J. Libby,<br>122 High St.,<br>Portland, Maine.                                 | <b>Region No. 2.</b><br>J. G. Livingston,<br>Chairman.<br>420 Lexington<br>Ave.,<br>New York City. | 7. (Not selected.)<br>8. E. R. Seal,<br>3714—14th St.,<br>N. W.,<br>Washington,<br>D. C.                  | 6. H. Garvin,<br>113 W. 70th St.,<br>Erie, Pa.   | 5. Dupont Guerry,<br>Box 578,<br>Greenville, S. C.               | <b>Region No. 7.</b><br>L. E. Mayer,<br>Chairman.<br>569 W. Van<br>Buren St.,<br>Chicago, Ill. |
| 2. A. L. Franks,<br>1196 Elm St.,<br>Manchester, N. H.                               | 1. J. G. Livingston,<br>420 Lexington<br>Ave.,<br>New York City.                                   |   | 7. Thos. G. Hodg-<br>don,<br>117 First Ave.,<br>Pittsburgh, Pa.                              | 6. R. H. Bouligny,<br>Box 634,<br>Charlotte, N. C.               | 1. Wm. McGuineas,<br>20 N. Wacker<br>Drive,<br>Chicago, Ill.                                   |
| 3. A. E. Sherwin,<br>92 Church St.,<br>Burlington, Vt.                               | 2. Karr Parker,<br>75 W. Mohawk<br>St.,<br>Buffalo, N. Y.  | <b>Region No. 4.</b><br>W. W. Clark,<br>Chairman.<br>1428 Engineers<br>Bldg.,<br>Cleveland, Ohio.         | 8. A. M. Rosen-<br>blatt,<br>Charleston Nat'l<br>Bank Bldg.,<br>Charleston,<br>W. Va.        | 7. J. M. Richard-<br>son,<br>106 Church St.,<br>Roanoke, Va.     | 2. J. E. Averbach,<br>1242 Michigan<br>Theatre Bldg.,<br>Detroit, Mich.                        |
| 4. Wm. H. Crow-<br>ley,<br>26 Taylor St.,<br>Springfield, Mass.                      | <b>Region No. 3.</b><br>F. M. Shepard,<br>Chairman.<br>401 N. Broad St.,<br>Philadelphia, Pa.      | 1. Geo. P. Fuerst,<br>Caxton Bldg.,<br>Cleveland, Ohio.   | <b>Region No. 5.</b><br>D. B. Clayton,<br>Chairman.<br>844 Martin Bldg.,<br>Birmingham, Ala. | W. W. Ingalls,<br>Chairman.<br>315 S.W. 10th Av.,<br>Miami, Fla. | 3. W. C. Burton,<br>715 N. Grand<br>Blvd.,<br>St. Louis, Mo.                                   |
| 5. E. L. Rousseau,<br>1 Waycross St.,<br>Worcester, Mass.                            | 1. H. B. Frazer,<br>250 N. Eleventh<br>St.,<br>Philadelphia, Pa.                                   | 2. A. B. Weinfeld,<br>51 E. Chestnut<br>St.,<br>Columbus, Ohio.   | 1. D. B. Clayton,<br>844 Martin Bldg.,<br>Birmingham, Ala.                                   | 1. George LaVigne,<br>72 N. E. 20th St.,<br>Miami, Fla.          | 4. Howard A.<br>Krigbaum,<br>147 S. Main St.,<br>Decatur, Ill.                                 |
| 6. A. J. Hixon,<br>22 Elkins St.,<br>Boston, Mass.                                   | 2. Leo P. Eiden,<br>533 Beech St.,<br>Scranton, Pa.  | 3. A. E. Bertke,<br>Second & Law-<br>rence Sts.,<br>Cincinnati, O.  | 2. J. A. Fowler,<br>118 Monroe Ave.,<br>Memphis, Tenn.                                       | 2. R. C. Bigby,<br>305 Franklin St.,<br>Tampa, Fla.              | 5. Geo. H. Magaw,<br>728 N. Jefferson<br>St.,<br>Milwaukee, Wis.                               |
| 7. R. T. Hawes,<br>592 Pleasant St.,<br>New Bedford,<br>Mass.                        | 3. A. J. Musser,<br>434 Market St.,<br>Harrisburg, Pa.   | 4. C. Carey,<br>1107 S. Brown St.,<br>Dayton, Ohio  | 3. C. E. Terrell,<br>1104 McCallie<br>Ave.,<br>Chattanooga,<br>Tenn.                         | 3. S. C. Reddick,<br>1432 Iona St.,<br>Jacksonville, Fla.        | 6. Robert J.<br>Nickles,<br>109 W. Main St.,<br>Madison, Wis.                                  |
| 8. H. A. Pierce,<br>77 Bayley St.,<br>Pawtucket, R. I.                               |  |   |  | 4. S. M. Byck,<br>141 Bull St.,<br>Savannah, Ga.                 | 7. G. M. Sanborn,<br>309 N. Illinois St.,<br>Indianapolis, Ind.                                |
| 9. J. H. Bauer,<br>440 Asylum St.,<br>Hartford, Conn.                                |  |   |  | 5. F. L. Sigler,<br>7 S. Joachim St.,<br>Mobile, Ala.            |  |

- |  |  |   |  |  |   |
|--|--|---|--|--|---|
| 8. E. C. Thirlwell, Sr.,<br>110 N. Fourth St.,<br>Louisville, Ky.    | 5. M. F. Hodge, (Unconfirmed)<br>Medford, Wis.                       | 1. J. A. Muhl, Jr.,<br>3936 Main St.,<br>Houston, Tex.          | 8. Leslie T. Allen,<br>312 Phelcade Bldg.,<br>Tulsa, Okla.       | 6. A. E. Dickey,<br>115 Main Ave., East,<br>Twin Falls, Ida.               | 4. Curtis Hess, (Unconfirmed)<br>1222 Van Ness Ave.,<br>Fresno, Calif.    |
| <b>Region No. 8.</b>   |  | 2. Henry Brewster,<br>409 S. Ervay St.,<br>Dallas, Tex.         | <b>Region No. 11.</b>  |  | 5. Jos. O. Case,<br>812 S. San Pedro St.,<br>Los Angeles, Cal.            |
| Wm. A. Ritt,<br>Chairman.<br>236 Foshay Tower,<br>Minneapolis, Minn. | 7. (Not selected.)   | 3. Eugene Ashe,<br>505 Jones St.,<br>Fort Worth, Tex.           | S. G. Hepler,<br>Chairman.<br>1932 9th Avenue,<br>Seattle, Wash. | <b>Region No. 12.</b>  |   |
| 1. F. M. Tripp,<br>3857 Garfield Av.<br>Minneapolis, Minn.           | 8. Charles Wood,<br>401½ N. P. Ave.,<br>Fargo, N. Dak.               | 4. Geo. E. Broome,<br>1003 Harrison St.,<br>Amarillo, Tex.      | 1. J. J. Agutter,<br>600 Harrison St.,<br>Seattle, Wash.         | Lloyd Flatland,<br>Chairman.<br>1899 Mission St.,<br>San Francisco, Calif. | 6. J. F. Zwiener,<br>229 B Street,<br>San Diego, Calif.                   |
| 2. (Not selected.)   | 9. Max Nickel,<br>Electric Supply Co.,<br>Sioux Fall, S. D.          | 5. A. Martin Wright,<br>1001 Navarre St.,<br>San Antonio, Tex.  | 2. J. R. Tomlinson,<br>219 Weatherly Bldg.,<br>Portland, Ore.    | 1. Thomas Harris,<br>85 Columbia Sq.,<br>San Francisco, Calif.             | 7. (Not selected.)  |
| 3. J. W. Hruska,<br>Mankato Elec. Co.,<br>Mankato, Minn.             | <b>Region No. 9.</b>   | 6. Martin F. Bauman,<br>3588 Morenci St.,<br>El Paso, Tex.      | 3. F. E. Smallidge,<br>112 Orondo Ave.,<br>Wenatchee, Wash.      | 2. J. D. O'Connor,<br>Sacramento, Cal.                                     | 8. R. P. Maybee, (Unconfirmed)<br>16 W. 7th St.,<br>Salt Lake City, Utah. |
| 4. John Ellenbecker,<br>21 Fifth Ave., S.,<br>St. Cloud, Minn.       | Earl N. Peak,<br>Chairman.<br>1603 W. Main St.,<br>Marshalltown, Ia. | 7. Guy Wetherbee,<br>412 N. Hudson St.,<br>Oklahoma City, Okla. | 4. D. F. Henderson,<br>S. 118 Lincoln St.,<br>Spokane, Wash.     | 3. Lester Poland, (Unconfirmed)<br>412 Fifth St.,<br>Eureka, Calif.        | 9. B. F. Carter, (Unconfirmed)<br>25 E. Adams St.,<br>Phoenix, Ariz.      |
|  | <b>Region No. 10.</b>  |   | 5. (Not selected.)   |  |   |
|  | Russel Jacobs,<br>Chairman.<br>1014 Prairie Ave.,<br>Houston, Tex.   |   |  |  |   |

have received the official approval of the administrator, we shall be in a position to determine what each individual's pro-rata share shall be. In the meantime, the Code Authority is operating on funds advanced by the N.E.C.A.

The Code Authority has divided the country into twelve regions for the purpose of coordinating local activities. These twelve regions are shown on the accompanying map.

The chairmen of each of these regions were chosen by the Code Authority. In most instances, in fact, they are members of the Code Authority.

Each regional chairman is responsible for organizing his region first by a regional code committee of not less than five or more than twelve members and through them the districts. These regional committeemen, when approved by the Code Authority, are to be the chairmen of their district code committees.

Under the rules of the Code Authority these regional committeemen must all be members of the N.E.C.A. in good standing.

The district chairmen are to secure from representative local groups, N.E.C.A. chapters or other local associations within each city or trade area in their districts nominations for members of the local administrative committees, the chairmen of which shall, with the district chairman, constitute the district code committee.

It is important that it be understood that each member of a local

administrative committee, with the exception of one, be a member of N.E.C.A. in good standing. Members of the local administrative committees are appointed by the Code Authority. Recommendations for their appointment come from the regional chairmen.

The regional code committees act as a liaison or coordinating agent between the Code Authority and the local administrative committees, organizing their respective regions, disseminating information, securing code compliance and adjusting complaints. In fact, the regional chairman is the Code Authority's representative in his own region.

He shall keep in touch with all of the local code activities in his region and to this end shall receive from each district chairman regular reports on the activities within his district and shall do such traveling within his regions as is necessary to keep informed.

It is now up to all contractors to get behind the code and gain the results of a very fine code. The Code Authority is organized and setting up regional and local administrative committees for the enforcement of the code. Full details of the requirements will be submitted by these committees. If you are not getting the information you desire, write to your association or Code Authority for instructions.

Contractors, this is your Code of Fair Competition. Help get it working by offering your cooperation

when required and conforming to its rules of enforcement. Industry is to manage its own affairs and as long as we do not violate any of its regulations, the Government will not have to interfere. It is a good code and it will help your business and free you from the many unfair abuses that have existed for years.

To those who are in our industry and not members of our national association we invite you to join. The administration of the code will be very largely by association members. Join and be represented.

#### CODE AUTHORITY ASKS FOR VOLUNTARY PLEDGE

A call has gone out to all members of the electrical contracting industry for a voluntary payment of \$5.00 to support the work of the Code Authority until such time as its budget is approved and it can levy an assessment. This voluntary payment is to be applied to the industry assessment when made.

The Code Authority needs money to carry out its program. Up to this time it has been financed by the National Electrical Contractors Association, but the amount of money available from that source is limited, especially in view of the fact that the association financed the expenses of securing a code.

The Code Authority, therefore, is depending upon the cooperation of the electrical contractors of the country to make the code effective.

*Electrical Contracting, June, 1934*

# Rulings and Interpretations

## *Issued by Construction Code Authority:*

### **Naming of Sub-contractors**

Advice is requested relative to whether an awarding authority under Article VII, Section 11, may require each general contractor to submit his list of subcontractors at the time he submits his bid.

Section 11 of Article VII is a safeguard set up for the protection of the owner. This provision confers the discretionary power to require the naming of the sub-contractors the bidder intends to employ. The owner thus has the opportunity to know and judge the sub-contractors the bidder proposes to use.

This right may be exercised only after the opening of the bids.

### **Time for Filing Sub-Bids**

An explanation is requested involving Section 7, Article VII, relative to whether bids must actually be in the physical possession of a general contractor at least twenty-four hours prior to the time set for the receipt of bid of said contractor by the awarding authority.

Section 7 provides:

The awarding authority shall designate a specific hour and place for receiving competitive bids. All bids to be submitted by sub-contractors shall be delivered to the contractor at least 24 hours prior to the time set for the receipt of the bid of said contractor by the awarding authority. Bids received after such time or from uninvited bidders shall be returned unopened. All bids shall be required to be signed by a duly authorized representative of the bidder and enclosed in a sealed envelope on the outside of which shall appear its identification as a bid for the particular job.

Section 7 requires that bids from sub-contractors must be in the physical possession of the general contractor at least twenty-four hours prior to the time set for the receipt of the general contract bids by the awarding authority.

## *Issued by Electrical Contractors' Code Authority:*

### **Local Associations Not to Act as Bid Depositories**

The Electrical Contractors Code Authority cannot approve of the

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designation of a local electrical contractors' association to act as a bid depository. The bid depository must be an independent and neutral agency apart from the local electrical contractors' association, serving as custodian of the bids until they are delivered to the local administrative committee to be opened and tabulated.

### **Bidders to Be Free to Act Until Bids Are Filed**

The Code Authority received a request for the approval of a local rule requiring all bidders who intend to submit a bid on any project to immediately notify the local administrative committee upon their receipt of plans or requests for bids. The Code Authority cannot approve of such a local rule, as each bidder must be left free of action in the preparation of his bid, and supervision of his bid cannot be required until after the bid has been opened by the awarding authority, except the requirement that a sealed copy of his bid shall be filed with the bid depository at the time that his original bid is filed with the awarding authority or with the general contractor.

### **Answers to Questions from Subscribers Made by Electrical Contractors' Code Authority**

*Question:* In your analysis of the electrical contractors' code, I note that "repair shops in service and repair work only" do not come under the provisions of the code. Will you please advise me if any code has been signed or is being formed to cover such service, particularly electrical repair and service and radio repair and service, including tube testing?

*Answer:* Service and repair shops are not under the code. An amendment is being prepared and will be submitted to N.R.A. for its consideration which would make this branch of the industry operative under the code. The code in no way, regulates individuals installing wiring or making repairs in their own residences for their own use, nor does it regulate the place at which they can purchase such materials. If, however, the installation is for others, it then comes under the industry code and must conform to its regulations.

*Question:* Is the code binding on all members of the contracting industry? In other words, is it mandatory to join or purely voluntary? The reason we ask is that we have an electrical contractor in our community who has never signed the President's agreement and who states that he won't sign the code. Is there any way to force him to play ball and how?

*Answer:* The Code of Fair Competition for the electrical industry is written for the very purpose stated. Everyone in the industry is required to conform with the code and to sign the agreement for the code eagle for the construction industry. Each locality having a group of contractors can organize into a local association and have approved a local administrative committee depending upon the population in your area. We recommend that you communicate with the regional chairman for full information on the formation of a local administrative committee.

\* \* \*

*Question:* Would you kindly send us interpretation of Code of Fair Competition in regard to rate of pay per hour for jobs that would have to be done after 5 P. M. or on Sunday? Could these men work more than 8 hours per day? The labor union does not have working agreements here yet and about one-half of the electricians are non-union men.

*Answer:* The rate of wages for electrical workers in excess of 8 hours per day, when emergencies and conditions require, should be paid on the basis of time and a half for overtime in accordance with the requirements of the code, and as a minimum wage during that overtime should not be less than \$1.12 per hour. If, however, your wage rate is higher than the minimum, that wage should be computed on the same basis.

\* \* \*

*Question:* We are located in a town of approximately 8,000 inhabitants with a few small country villages of from 300 to 500 inhabitants each, also a farming section. The people have never had to pay over \$1.00 per hour for electrical work,



now and for sometime, only 80 cents per hour. We employ three men, or we try to find work enough for them, which is impossible for full time. We signed up with the NRA and have worked under the retail and general code but do not see how we can pay 75 cents per hour for labor and can only charge the customer 80 cents per hour, and cannot see how we can charge the customer more unless we can have some protection from the pocket electrician, or carpet-bagger, that will work for 30 cents per hour and purchase his stock from the five and ten or mail-order house.

*Answer:* In accordance with Chapter VI, electrical contracting division code, Section 1, the rate of wages, 75 cents per hour, is the lowest wage which can be paid for the service of electrical workers and accordingly it will be necessary to conform with the requirements of the code. It is advisable for you to organize your group of contractors within the confines of your locality or within close proximity to other towns for the purpose of organizing a local administrative committee. For the enforcement of the code it is recommended that the matter be taken up with the regional chairman in your area.

\* \* \*

*Question:* Can a town employee, not an electrician, that is not on the town payroll as such, do installation work on new equipment? This town is installing traffic lights, buying the material direct from the manufacturer, and is going to make its own installation. I bid on the installation but could not meet this competition, as they had no labor, overhead or profit figured in.

*Answer:* Section 3, Article III, Chapter I of the Code of Fair Competition for the construction industry exempts provisions of this code as follows:

"Where provisions concerning hours of labor or rates of pay have been established for specific projects by competent governmental authority or agencies, whether federal, state or political subdivision thereof, acting in accordance with law. Any employer required to comply and complying with the provisions so established shall be relieved of compliance with any conflicting provisions of this article, or any action taken in accordance therewith."

Accordingly in competing with your local municipality the rate of wages should have been established by the political subdivision, thus giving

you equal opportunity to compete with such wages as they may establish. This, however, is purely a voluntary matter on the part of the political subdivision, but in the interest of fair competition should have been given consideration.

\* \* \*

*Question:* I am an electrical contractor working with the tools. We have here another contractor whose wage regardless of distance is 25 cents per hour and he seems to think that there is no such thing as overhead. I live in a town of less than 2500 population and I would like to know what the code is going to require of me. I have been working at the rate of 50 cents per hour and as many hours per week as I wanted to, provided I could get work. It is hard to get work now at 50 cents per hour and I am afraid if I have to charge 75 cents per hour I will not get any. Will you kindly set me straight on this point?

*Answer:* The Code of Fair Competition exempts employers in establishments employing not more than two persons in towns of less than 2500 population, and accordingly in accordance with Article 3, Section 2, paragraph 3b of Chapter I of the Construction Industry Code of Fair Competition, you would be exempt from the provisions of the code.

\* \* \*

*Question:* The firm I am connected with consists of the owner who is a registered electrician but does very little manual labor, one steady electrician who is not registered but who has worked here 2 years, a girl who answers the phone only, and an occasional helper or two when the occasion demands. The firm's work is approximately 90 per cent repairs, 5 per cent additions and 5 per cent new work. At one time new work was about 25 to 50 per cent. What should the wages and hours of the electrician be? Would there be a difference if he was working on repairs or new work? Would the fact that he was not registered take him out of the "skilled labor" class at 75 cents an hour? What would be the hours and wages of the girl? The code excludes shops for "repair only". What is our classification? We have signed the blanket code. Does that automatically hold us with this specific

code? Or must we sign the new one? What would the wages be for the temporary helpers? Since the owner is registered would that make it possible for the unregistered electrician to be listed as a helper?

*Answer:* The wages of an electrician or electrical worker are 75 cents an hour minimum. In accordance with Article 2, Section 1, Chapter VI, the hours of labor shall not be in excess of 40 hours in any one week or in excess of 8 hours in 24, except such unusual conditions as are provided for in Section 2b, Article III, Chapter I.

The girl to whom you refer comes under the requirements of Section 2a, Article III, Chapter I. The wages are placed at from \$12 to \$15 per week, depending upon the population in your area.

Electrical contracting is defined in Article I, Section 1, Chapter VI, to mean the erecting, installing, altering, repairing, servicing or maintaining electrical wiring, devices, appliances or equipment. All work done for others under contract or other basis of compensation will come under the requirements of the code.

The blanket code which you have signed is no longer operative since the code has been approved and accordingly it becomes necessary to make application for the code eagle. These applications were delivered by the postal department and should be available at the Post-Office. When signed it should be forwarded to the compliance director in your area.

The wages of a helper are not defined in the new code but shall not be less than the wage for unskilled labor, which is 40 cents an hour. The code has nothing to do with the registration of an electrician or electrical worker in any municipality and accordingly leaves to the employer the question of whether the worker is skilled or unskilled. The kind of work that is being done in no way changes the wage scale insofar as the minimum is concerned, whether it be for new work, modernization or repair. If the owner works with the tools as an electrical worker, he shall charge his own wages in accordance with the provisions of the code.

Electrical repair or service shops for work done within the shops are not a part of this code.

*Electrical Contracting, June, 1934*



## Why the Public Should

# Patronize Licensed Contractors

THE past few years have brought a tremendous increase in bootleg wiring, that is uninspected wiring. While most municipalities now have electrical ordinances which have been drawn up for the specific purpose of protecting the public against hazardous installations, the public seems to pay little attention, particularly householders, to such ordinances and goes merrily on its way making alterations and additions to the present service either by doing the work itself or employing school-boys, janitors or others without license.

It has been stated that education in our technical high schools is responsible for some of this inasmuch as the boys are given a smattering of electricity, making them feel that they are able to make electrical installations. Others have been of the opinion

that the rise of radio, particularly during the years when so many people were building their own sets, gave the people a sort of familiarity with wiring. In all probability, however, it is doubtful if the public really appreciates the fact that there is an electrical ordinance and that it was created because a distinct need existed for such a public protection. In other words, it is doubtful if either the electrical department or the electrical industry have taken sufficient pains to fully sell the local public upon this electrical ordinance. Undoubtedly many weeks and months were spent in preparation for the ordinance, but it is doubtful if a day has been spent since the ordinance was written to bring it to the attention of the public.

In order to assist both the inspection departments and the organized contractors to combat bootleg wiring

through public education, ELECTRICAL CONTRACTING has secured from a number of inspectors and contractors in different sections of the country their thoughts on "Why the Public Should Patronize Licensed Rather than Unlicensed Contractors." These reasons, twelve in number, are given herewith. They can be used in radio talks, in interviews with the press, on blotters, in folders, with electric light bills, on billboards.

Talks on this subject can be given before neighborhood associations and clubs, parent-teachers' meetings, civic organizations, luncheon clubs, etc.

The frequency with which these reasons reach the attention of the public will measure the rapidity with which the public gives up its practice of employing anyone but a licensed contractor.

1. Electricity is dangerous. Your city protects you with an electrical ordinance requiring that all wiring be done by licensed electrical contractors.
2. To get a license a contractor must prove his ability to do good work by examination, by test or by experience.
3. No contractor can keep his license unless he does safe work. This is your insurance of safety.
4. A contractor who takes out a license intends to stay in business and, therefore, makes his charges as reasonable as good work will permit him.
5. A licensed contractor does not buy sub-standard products.
6. A licensed contractor has a known place of business. If anything goes wrong with his work at any time you can locate him and he will correct the defect.
7. A licensed contractor deserves your business because he obeys the city's laws that were created for your protection, he has a place of business and pays taxes.
8. A licensed contractor has to put up a bond thereby assuring you that his work will be completed to your satisfaction.
9. A license is your guarantee not only that the contractor is capable, and responsible but that the job will be installed in a workmanlike manner, in accordance with the law and will be safe.
10. Remember that the reason bootleggers have no license is that most of them cannot get a license, while their work is so poor no good contractor will hire them.
11. You generally get what you pay for except that when you hire an unlicensed contractor you generally get in addition an unsafe job.
12. Licensed contractors are not expensive. Competition keeps the cost down. Safe wiring, however, does not need repairing so that in the long run wiring by licensed contractors costs less than that by bootleggers.

# A Short Method of Estimating

In response to a demand for a set of labor tables sufficiently complete to cover the more common forms of installation and so simple to use that calculations would be minimized the author has compiled the following figures from a great mass of data covering hundreds of jobs.

By A. J. Allyn

## Taking-off Material

An estimate should be a comprehensive appraisal of the material, labor, and miscellaneous expenses required to complete a job. Because the labor and miscellaneous expenses are dependent upon the quantities of material, it is of utmost importance that the latter be accurately taken off and recorded in a systematic manner.

Determine the time necessary to make an intelligent estimate and arrange your work accordingly. Examine the plans and specifications for building construction, service connections, different systems, symbol schedules, notes, missing sheets, and unusual job conditions. Read carefully the specifications including the General Conditions, and note any discrepancies, inaccuracies, omissions, infractions, and the like that require further elucidation, together with special equipment whose costs are not readily obtainable.

Take off the material in the following sequence:

1. Entrance Equipment.
2. Switch and Panelboards.
3. Service and Feeders.
4. Power Circuit work.
5. Lighting Circuit work.
6. Fixtures.
7. Special Systems.
8. Temporary work.

Use letter-size sheets with convenient horizontal and vertical rulings, for feeder and for outlet work. Use the feeder sheets for listing the service, feeder, and power circuit work; and the outlet sheets for the remainder of the work. Number the material sheets consecutively. For very small jobs, headings 1 and 2, 3 and 4, 5 and 6, may be combined.

The pricing sheets should be similar to the schedule sheets and should be numbered in the same manner.

Each item should be checked off from the schedule sheet as it is transferred to the pricing sheet.

The following tables show a uniform method of listing the material on the pricing sheets. The symbol (/) denotes "and or".

### 1. Entrance Equipment

*System: voltage, phases, wires, cycles*  
Service Sleeves/Connections/Switches  
C.T./P.T. Transformers, Cabinet  
Master/Tenant Meter Connection Devices  
Meter Boards/Racks/Troughing  
End Line Cutouts/Enclosures, Fuses  
Meters and Trims  
Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

All conduit and wire work should be listed under heading 3 (Service & Feeders). All metering equipment, other than that which is located on switch and panelboards, should be listed under heading 1 (Entrance Equipment).

### 2. Switch and Panelboards

*System: voltage, phases, wires, cycles*  
Switchboards: (kind)  
Panels, Framework, Buswork  
Disconnect/Protective/Meter Devices  
Enclosure, Pull Box, Mat  
Panelboards: (kind)  
Panels, Cabinets, Buswork  
Disconnect/Protective/Meter Devices  
Switches, Fuses, Directories  
Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

### 3. Service and Feeders

Conduit: (how installed)  
Elbows & Couplings, Supports  
Locknuts & Bushings, Fittings  
Pull/Junction/Support Boxes  
Raceways & Wireways:  
Fittings, Bushings, Supports  
Armored Cable, Connectors, Supports  
Wire & Cable:  
Joints, Taps, Taping  
Potheads, Tubes, Supports  
Miscellaneous Supports & Anchors  
Cuttings/Patching/Painting  
Sundries & Overtime

### 4. Power Circuit Work

See heading 3 for Conduit & Fittings, Boxes, Race/Wireways, Wire & Cable  
Motors, Enclosures, Shaft Couplings, Rails, Reduction & Tension Devices  
Starters & Controllers:  
Control & Indicating Devices,  
Switches, Protective Panels, Fuses  
Mechanical Apparatus: Pumps, Fans, etc.

Power Receptacles/Plugs/Appliances  
Foundations, Soundproofing  
Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

### 5. Lighting Circuit Work

See heading 3 for Conduit & Fittings, Race & Wireways, Pull/Junction/Support Boxes  
Outlet Boxes, Covers, Rings, Studs, Supports  
Floor Boxes, Covers, Floor Ells/Tees/Tops  
See heading 3 for Wire & Cable  
Surface Fittings for Floor Outlets  
Switches, Receptacles, Combinations, Caps  
Fan Hangers, Cover Plates, Mats, Engraving  
Miscellaneous Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

### 6. Fixtures

Lamp Receptacles, Guards, Cord Connectors  
Drop Cords, Cord Adjusters, Shade/ Holders, Guards  
Dome Reflectors, Diffusers, Guards, Stems  
Mercury Lights, Suspensions, Disconnecting & Control Devices  
Vapor/Explosion Proof Fixtures, Exit Signs  
Ceiling Fixtures, Canopies, Stems, Fitters, Diffusers, Wiring  
Wall Fixtures, Canopies, Stems, Fitters, Diffusers, Wiring  
Projectors, Spill Rings, Hoods, Guards  
Striplights, Signs, Color Caps, Flashers  
Shock Absorbers, Aligners, Box Covers  
Lowering & Disconnecting Devices  
Lamps, Fixture Wire, Hickeys, Insulating Joints  
Miscellaneous Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

### 7. Telephone System (Kind)

Terminal Cabinets, Backing, Supports  
See heading 3 for Conduit & Fittings, Outlet Boxes, Covers, Backboxes, Supports  
See heading 3 for Wire & Cable  
Cover Plates, Pull-in Wire  
Switchboard, Enclosure, Central Equipment  
Superintendents Annunciator  
Vest/Trade/Supt/Apartment Telephones  
Master/Submaster/Outlying Stations  
Booths, Chairs, Coils, Condensers, Spares  
Letter Boxes, Push Buttons, Directories  
Speaking Tubes, Fittings, Mouthpieces  
Power Supply: Dry/Wet Cells, Chargers  
Transformers, Cabinets, Power Units  
M.G. Sets, Control Panels

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Terminal Strips, Separable Connectors/  
Plugs  
Miscellaneous Supports & Anchors  
Cutting/Patching/Painting  
Sundries & Overtime

Call Bell, Watchman, Alarm, Clock, Hospital,  
Radio, and Sound systems should be listed in a  
manner similar to the Telephone System.

#### 8. Temporary Work

See heading 1 for Service/Meter Equip-  
ment  
See heading 2 for Distribution Centers  
See heading 3 for Conduit & Wire  
Sockets, Lamp Receptacles, Trailers,  
Lamps  
Allowances for wiring to unlocated  
motors  
Maintenance, Operation, Removal,  
Changes  
Junk Value, Meter Charges, Supports &  
Anchors  
Cutting & Patching  
Sundries & Overtime

*Any unusual job condition which  
affects the cost of installation should  
be noted opposite the item affected.*

#### Pricing

Due to the fluctuating price of ma-  
terial, the latest costs should be ob-  
tained from the suppliers.

Due to the fluctuating price of

labor, man-hours should be used in  
preference to dollar values.

In this Short Method of Estimati-  
ng, the labor for the roughing ma-  
terial is combined to lighten the task  
of taking off and pricing. Elbows  
and bushings are included in the con-  
duit labor, whereas fittings are a  
separate unit to compensate for the  
shorter length average cut when they  
are used. The labor for supports is  
included with that of the material  
erected. Concrete supports should be  
used for stone, concrete, and the  
average of concrete and wood sup-  
ports for either brick or cinder con-  
crete. When figuring wire labor a  
15 ft. average (single distance) is  
considered a short run and a 50 ft.  
average a long run; an average unit  
should be used for runs between 15  
and 50 ft., and also for intermediate  
wire sizes.

The following tables list the actual  
labor to which should be added the  
percentages given in Table 20 for  
special conditions.

The unit prices should be filled in  
on the pricing sheets while the ma-  
terial take off is fresh in mind. Before  
making any extensions, re-read the  
specifications for any possible errors  
or omissions. After the estimate has  
been priced, the extensions and addi-  
tions should be checked by another  
person.

The proposal should contain a clear  
and concise synopsis of the work you  
intend doing.

The following labor units are based  
upon broad averages. Chiefly because  
of the management and personnel of  
the workers these averages will fluc-  
tuate during the coming years and in  
the different localities. Rather than  
change the units on this account, it  
is much simpler to use the actual  
divided by the average labor as an  
efficiency factor. The comparison of  
his particular labor efficiency with  
the average, is each contractor's indi-  
vidual problem, but in no case should  
less than 8/10 be used as an efficiency  
factor.

TABLE 1. CONDUIT

Man hours per foot					Fittings
Concealed		Exposed			Man hours per hub
Straight run	Right angles	Size	Wood	Concrete	
0.04	0.043	1½"	0.056	0.075	0.13
0.046	0.051	¾"	0.066	0.085	0.15
0.063	0.071	1"	0.091	0.11	0.20
0.075	0.081	1¼"	0.113	0.133	0.25
0.092	0.108	1½"	0.136	0.156	0.3
0.113	0.137	2"	0.17	0.19	0.4
0.162	0.185	2½"	0.223	0.251	0.5
0.2	0.232	3"	0.282	0.31	0.6
0.24	0.277	3½"	0.335	0.362	0.7
0.29	0.33	4"	0.41	0.44	0.8

Use Outlet Box Labor for 1/2" to 1" Outlet Fittings.  
Add 2 per cent per foot for ceilings over 16 ft. high.

TABLE 2. WIRING DEVICES

Man hours each	
SP Switch	0.3
DP Switch	0.35
3W Switch	0.4
4W Switch	0.5
Ceiling Sw.	0.35
Pendant Sw.	0.3
Canopy Sw.	0.35
Chain Sw.	0.25
Door Sw.	1.0
2W Receptacle	0.3
3W Receptacle	0.4
20A 2W Rec.	0.35
30A 2W Rec.	0.45
Fan Rec.	0.4
KO Receptacle	0.25
1/2 Gang Mat.	0.25
2W Cord Conn.	0.3
3W Cord Conn.	0.45

TABLE 3. OUTLETS

	Man hours per outlet			
	Concealed	Wood	Exposed	Wood
Ceiling	0.25	0.40	0.60	0.40
Wall	0.65	0.55	0.60	0.45
Floor	1.30	1.25		

TABLE 4. ARMORED CABLE

	Man Hours New Work		Old Work	
	Fire-Proof	Wood	Fire-Proof	Wood
BX Outlet, each	0.5	0.4	1.0	0.8
	Per ft.			
2w No. 14 BX	0.03	0.02	0.1	0.04
3w No. 12 BX	0.04	0.03	0.12	0.05

TABLE 5. UNDERGROUND WORK

Man hours per cu. yd. in soft clay soil	
Depth	Hard Clay Add. .... 35%
Excavated	15% Rock Add. .... 65%
1-6'	30% Rock Add. .... 130%
8'	60% Rock Add. .... 300%
10'	
13'	Backfill Cu. Yd. .... 0.2
15'	4" Fibre Duct ..... 0.05
18'	4" Tile Duct ..... 0.1
20'	4" Concrete Duct .... 0.1
Manhole Cover	Concrete per cu. yd. 3.0
Manhole Forms per	Reinforcing per lb. 0.01
sq. ft.	



TABLE 6. METAL MOLDING

Man hours per foot

Concrete	Wood
0.25	0.17

TABLE 7. CHANNELLING

CHANNELLING			DRILLING		
Man hours per ft.			Man hours per 1" depth		
Concrete	Brick	Tile	Size	Concrete	Brick
0.75	0.25	0.07	1 1/2"	0.15	0.06
0.82	0.27	0.07	3/4"	0.17	0.08
0.9	0.3	0.07	1"	0.2	0.1
1.05	0.35	0.1	1 1/4"	0.25	0.1
1.2	0.4	0.1	1 1/2"	0.3	0.1
1.35	0.4	0.1	2"	0.35	0.13
1.7	0.6	0.1	2 1/2"	0.4	0.15
2.0	0.6	0.1	3"	0.45	0.15
2.4	0.6	0.1	3 1/2"	0.5	0.15
2.75	0.6	0.1	4"	0.55	0.15

TABLE 8. METER EQUIPMENT

Man hours per meter

Trough	0.5
Cutouts	1.
Pans	1.5
Boards	0.5

TABLE 9. FIXTURES

Man hours each

RLM Ceiling Dome	0.4
Ditto with Stem	0.65
Add for Glass Steel Reflector	0.15
Gooseneck	0.15
Wall Flange	0.6
Ceiling Flange	0.4
Drop Cord and Socket	0.3
Guard	0.05
Bushed Cover	0.07
Shade and Holder	0.1
Cover Socket	0.3
Vapor Proof Body and Globe	0.4
100 watt Ceiling Unit	0.4
1000 watt Ceiling Unit	0.5
100 watt Chain Unit	0.5
1000 watt Chain Unit	0.6
Common Chandelier	2.0
Heavy Chandelier	3.0
Bracket	0.3
Trough Light per Foot	0.15
Bank Screen Lt. per Foot	0.5
Wiring per Socket	0.2
Lamps	0.04
Desk Fan	0.25
Ceiling Fan	1.5

TABLE 10. CABINETS AND PULL BOXES (5" deep)

Man hours per box

Hinged Cover	Size	Add per 1"	Screw Cover
Concrete Wood	Sq. Ft.	additional depth	Concrete Wood
1.3 0.6	2	5%	1.8 1.1
1.6 0.9	4	5%	2.2 1.5
1.8 1.1	6	5%	2.7 2.
2.4 1.5	8	4%	3.4 2.5
2.7 1.8	10	4%	3.9 3.
3.4 2.5	12	4%	4.7 3.8
4. .2.9	15	3%	5.7 4.6
4.4 3.3	18	3%	6.2 5.1
4.7 3.6	20	3%	6.6 5.5
5.8 4.4	25	2%	8.1 6.7
6.3 4.9	30	2%	8.5 7.1
6.8 5.4	35	2%	8.9 7.5

TABLE 11. PANELBOARDS

Man hours each

2P		Amp.	3P	
Panelboard	Switchboard		Panelboard	Switchboard
0.8		15	1.1	
1.1	2.0	30	1.6	3.0
1.5	2.4	60	2.2	3.6
2.2	3.5	100	3.3	5.0
3.0	5.0	200	4.5	7.5
5.0	7.0	400	7.5	10.5
7.0	10.0	600	10.5	15.0

Add for Circuit Breaker/Extended Bus 20%

Meter/Shunt/Transformer, 2.0

Grille per Sq. Ft., 0.1

TABLE 12. SAFETY SWITCHES

Man hours each

2P		Amp.	3P	
Concrete	Wood		Concrete	Wood
1.6	0.9	15	1.8	1.1
1.9	1.2	30	2.2	1.5
2.3	1.6	60	2.9	2.2
3.0	2.3	100	4.0	3.3
4.0	3.2	200	5.3	4.5
6.2	5.4	400	8.7	7.9
9.6	8.5	600	13.6	11.5

Add 1. for time switch

Add 20% for cutouts and cabinet

TABLE 13. STARTERS

Man hours each

220 V.		H.P.	440 V.	
Concrete	Wood		Concrete	Wood
3.0	2.3	1	3.2	2.5
4.0	3.3	5	3.7	3.0
6.0	5.0	10	5.0	4.0
7.0	6.0	20	5.5	4.5
9.0	8.0	30	6.5	5.5
12.0	11.0	50	8.0	7.0
17.0	16.0	75	12.0	11.0
23.0	22.0	100	15.0	14.0

Add 150% for Setting Motor.

3W Push Button 0.75. 5W Push Button 1.0.



TABLE 14. UNDERFLOOR DUCT WORK

Man hours

Steelduct .....	0.09 per ft.
Fibreduct .....	0.07 per ft.
Junction Box .....	3.0 each
Elbow .....	1.0 each
Insert .....	1.0 each

TABLE 15. SIGNAL AND TELEPHONE WORK

Man hours

Bells	Gongs	Buzzers
4 in. Bell, 0.35 each	10 in. Gong, 0.5 each	Reg., 0.3 each
6 in. Bell, 0.40 each	12 in. Gong, 0.6 each	R.C., 0.4 each
Annunciators		Return Call Ann.
Per Drop.....	0.4	Per Drop.....0.5

Terminal Strips Per Point

Clamp Connector ....	0.15	Solder Connector ....	0.2
----------------------	------	-----------------------	-----

Push Buttons	Transformers
1 Button Plate .....	0.3
1 Button Pad & C....	0.3
Add per Button.....	0.15
Pendant Button .....	0.3
Floor Tread .....	0.3
Mat .....	0.2
50 watt .....	0.4
250 watt .....	0.75
500 watt .....	1.0
Cabinet .....	0.6
Power Unit .....	1.5
Dry Cell .....	0.2

Letter Boxes	Speaking Tube
With Mouthpiece only, 0.35	Per Foot .....
With Mouthpiece and	Per Outlet .....
Push Button .....	0.5

Telephones	Watchman Station
1 Station Wall .....	1.0
1 Station Desk .....	0.6
Add per Station.....	0.2
Telephone Switchboard, 3.0	Magneto Station .....
Add per Line.....	0.2
Detector Station.....	0.6
Master Phone .....	1.5
Hand Set .....	0.3
Portable C. ....	0.3
Portable Clock Key	Station .....
Station .....	0.5

Fire Alarm Stations	Tank Alarm
Break Glass .....	5.0
Non-Interference .....	1.5
Control Panel .....	10.0

Clocks	Antenna System
Master .....	7.5
Secondary .....	2.0
Program Mechanism...	15.0
Mantel Clock .....	0.3
Antenna Coupler .....	1.5
Resistor .....	0.25
Ext. Coupler .....	1.0
Line Terminal .....	0.25
Loading Coil .....	0.5
Telautograph .....	2.5

Nurses' Stations	Autocall System
Cord Station .....	0.5
Emergency Station ...	0.6
Add for Lamp.....	0.2
Each Added Cord....	0.4
Single Corridor Lamp..	0.5
Double Corridor Lamp..	1.0
Ann per Stat.....	0.4
Holdup Alarm	Each Station .....
Footrail Sw. ....	0.5
Police Transmitter ...	1.25
Supvsy Lamp .....	0.4

TABLE 16. WIRE

Man hours per ft.

Rubber Covered		Size	Lead Covered	
Long	Short		Long	Short
0.005	0.007	14	0.010	0.015
0.007	0.01	10	0.015	0.020
0.012	0.015	6	0.020	0.030
0.015	0.020	3	0.025	0.035
0.02	0.025	1	0.030	0.040
0.025	0.030	00	0.035	0.050
0.030	0.035	0000	0.040	0.060
0.04	0.05	400	0.06	0.09
0.05	0.07	600	0.08	0.12
0.07	0.10	800	0.11	0.16
0.10	0.13	1000	0.13	0.20

CABLE SUPPORT 20% Internal Diameter of Conduit

TABLE 17. COPPER BUSBAR

.17 man hours per pound

TABLE 18. LEAD COVERED TELEPHONE CABLE

Man hours per ft.				
	Long	Short		Long
6 pair .....	0.015	0.020	41 pair .....	0.030
11 pair .....	0.017	0.025	51 pair .....	0.032
16 pair .....	0.020	0.030	61 pair .....	0.035
21 pair .....	0.022	0.032	75 pair .....	0.040
26 pair .....	0.025	0.035	101 pair .....	0.050
31 pair .....	0.027	0.037	121 pair .....	0.060

TABLE 19. RC SPLICES

RC SPLICES	Man hours each	RC TAPS	Man hours each
Solder	Clamp	Solder	Clamp
0.08	0.04	14	0.25
0.12	0.1	10	0.35
0.4	0.25	6	0.7
0.6	0.35	3	0.95
1.1	0.5	1	1.3
1.5	0.6	00	1.7
1.9	0.7	0000	2.2
3.3	1.1	400	3.0
4.6	1.5	600	4.0
7.0	2.1	800	5.0
9.0	2.5	1000	6.0

TABLE 20. LABOR ADDITIONS

Add to Conduit Work		Add to Affected Work			
Varied Layout . . . . .	5%	Bad Weather . . . . .	10%		
Difficult Layout . . . . .	10%	Busy Premises . . . . .	30%		
Complex Layout . . . . .	15%	Overtime . . . . .	120%		
For Lost Time and Superintendence					
1 Hour	100%	6 Hours	15%	50 Hours	7%
2 Hours	50%	7 Hours	15%	100 Hours	5%
3 Hours	40%	8 Hours	15%	200 Hours	3%
4 Hours	30%	16 Hours	12%	500 Hours	1%
5 Hours	20%	24 Hours	10%	1000 Hours	0%

# Electrical Code

Under the provisions of the code a Code Authority of 10 members is called for to serve for one year, seven to be members of the National Electrical Contractors Association and three to be non-members.



**L. E. Mayer, Chairman**  
Chicago, Ill.

*Association Member*

Mr. Mayer is president of White City Electric Company with which he has been associated since 1908, specializing in large commercial work. Member of Executive Committee since 1927 and president of the association since 1929. Chairman of N.R.A. Code Committee.



**Earl N. Peak, Vice-Chairman**  
Marshalltown, Iowa

*Association Member*

Mr. Peak organized the Marshall Electric Company twelve years ago, now specializing in rural electrification. Former president of the Iowa Association. A member of the Executive Committee, N.E.C.A. for five years and vice-president since 1929. Member of N.R.A. Code Committee.



**Alfred J. Hixon**  
Boston, Mass.

*Association Member*

Mr. Hixon started the Hixon Electric Company in 1908 which engages in large interstate work. Member Executive Committee N.E.C.A. President of the Massachusetts State Association for five years and of the Boston Association for eleven years.



**J. G. Livingston**  
New York, N. Y.

*Association Member*

Mr. Livingston has been in the contracting business since 1898 and is president of J. Livingston & Company which specializes in the larger type of operations throughout the United States. At present a member of the Executive Committee, N.E.C.A.



**W. W. Ingalls**  
Miami, Fla.

*Association Member*

Mr. Ingalls in 1923 formed the Ingalls Electric Company which engages in general electrical construction work. He organized the first N.E.C.A. Chapter in Florida. Member of Executive Committee, N.E.C.A. since 1929.

# Contractors Authority



**Russell L. Jacobe**  
Houston, Tex.

*Non-Association Member*  
Mr. Jacobe has for years engaged in electrical engineering and construction work. He has been very active in local contractor association work.



**William A. Ritt**  
St. Peter, Minn.

*Non-Association Member*  
Mr. Ritt took over his father's contractor-dealer business in 1929. He was one of the founders of the Minnesota Electrical Association, and also of the Minnesota Electrical Council. At present is secretary-manager of this latter group.

**R. W. Hodge**  
Kansas City, Mo.

*Non-Association Member*  
Mr. Hodge has been a contractor for nearly 40 years, pioneering in municipal and isolated plant engineering and installation. Several times vice-president of local contractors' association and vice-president of electrical league.



**D. B. Clayton**  
Birmingham, Ala.

*Association Member*  
Mr. Clayton started the Mill & Mine Construction Company in 1919, specializing in commercial and industrial electrifications. President, Electrical League of Alabama; president, Southeastern Industrial Chapter, N.E.C.A.; president, Construction League of Alabama; member executive committee N.E.C.A. and N.R.A. Code Committee.



**Lloyd A. Flatland**  
San Francisco, Cal.

*Association Member*  
Associated with his father in the Globe Electric Works, one of the first electrical contracting businesses to be established on the Coast. The company specializes in industrial installations. President of San Francisco Association and also of Northern California Chapter, N.E.C.A. A member of the Executive Committee, N.E.C.A.



**L. W. Davis, Executive Officer**  
New York, N. Y.

For the past ten years Mr. Davis has been secretary and general manager of the N.E.C.A., prior to which for a few years he toured the country as field man for the association. He was a member of the N.R.A. Code Committee and at present represents the N.E.C.A. on the Construction Industry Code Authority.

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# electrical contracting

*With which is consolidated Electrical Record*

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S. B. WILLIAMS, Editor

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## THE CODE

THE electrical contracting industry is now being organized for operation under its Code of Fair Competition. It is expected that the budget may be approved most any day whereupon the plan for assessing the cost may be announced.

Once this is accomplished the work of organization can go ahead much faster for then the money to meet the necessary expenses can be raised. So far the National Electrical Contractors' Association has financed the Code Authority.

The contractors have waited a long time for this code and it is hoped that in operation it will measure up to expectation. It is not a code for a favored few, but a code for the entire electrical contracting industry. It places no premium on size. It very definitely attempts to place competition not only on a fair basis but on a basis that will be profitable.

There have been instances in other industries where the administration of the code has given the impression of oppression of the small fellow as well as unwarranted price raising. It is easy for such impressions to get about unless the people in charge of the local administration are especially careful.

It must be remembered that the code is not a license for a combination or association to restrict the number of competitors. The rules regarding competition are clearly laid down in the code. Any further restrictions under the guise of a code activity are not permitted.

And there is still one further point to be considered and that is the public. It makes little difference how right a local group might be, they will secure the public illwill unless they are careful. The opposition press is looking for small apparent injus-

tices. While the attack will generally be made for the purpose of criticizing N.R.A., the effect will be to stir up public illwill against the electrical contractors. It is advisable, therefore, always to go slow and, if anything, lean over backwards to consider the offender's story and give him a break.

Local committees will naturally want to get into action quickly. They will be well advised to go slow. Speed brings mistakes and mistakes cause loss of confidence.

Be sure of yourself before you go ahead. Be fair. Let the public know what you are doing. In this way the code can be of inestimable value to every member of the industry.

---

## CONDITIONS IN THE INDUSTRY

ALTHOUGH the average electrical contractor may feel that so far as he is concerned the depression is still on, the fact remains that conditions in and surrounding the electrical construction business are better now than they were a year ago.

Construction has increased considerably with a definite pick-up in privately financed projects. It is true that the entire volume is not great in comparison with that of 1927-8 but it nevertheless is trending upwards.

The volume of vacancies is growing smaller and, in fact, in a number of places a distinct underbuilt condition, particularly in residential property, is already developing.

The drawback at the moment, of course, is available financing. The most favorable sign is the proposed plan of the Federal Administration to encourage private loans for new residences and for modernization of homes through a government insurance or form of guarantee of the loan.

The kilowatt-hour output of the country continues to show improvement, having caught up to 1931 levels already. This betterment in power company business must sooner or later be reflected in the electrical contracting business.

A remarkably fine business is reported in appliances, particularly the major appliances. Range sales this year are expected to exceed those of any previous year while water-heaters are making big strides.

The wave of rate reductions which has swept the country has resulted in a greater effort on the part of the power companies to increase the residential load. The revenue to the contractor from this avenue alone will total many millions more than last year.



This activity in major appliances plus air conditioning will be reflected in the new homes in a greatly increased wiring job. Where 2 percent of the cost of construction was set apart as the amount for the wiring, it now appears that this will be increased considerably.

The outlook in other words is rapidly becoming brighter.

#### PUBLIC EDUCATION ON LICENSING

**M**ORE local associations of contractors have been formed for the purpose of securing a licensing ordinance probably than any other single cause. Committees will work untiringly for weeks and months and sometimes years to secure the desired legislation. And then what?

The most important part of the operation is to secure the public approbation, but is this ever done? We learned during the prohibition period that a law prohibiting certain actions was of little consequence so long as the public was willing to purchase the illegal wares.

The same condition prevails with respect to the public attitude toward licensed wiring with the exception that a smaller part of the public knows that all wiring should be inspected.

The public must be educated if bootlegging is to be curtailed. To help in this work ELECTRICAL CONTRACTING has gathered twelve reasons why the public should patronize only licensed electrical contractors. These reasons will be found elsewhere in this issue. Put them to work. Every member of the public that is sold on this principle means so much more work for the legitimate contractor.

#### HOW MANY FIRES ARE NECESSARY?

**O**NE of the common excuses for not pushing reinspection is that in spite of the existence of great quantities of bad wiring, the buildings have not caught fire. We wonder if this is so.

How far must we go in burning down buildings and killing people—for defective wiring and electrical fires are killing people—before we try to correct defective wiring?

Did we have to kill thousands of people by arsenic before we had a law regulating the sale thereof?

How many people were killed by electric signs before our cities began to pass laws

regulating the installation and reinspection thereof?

How many elevator accidents were necessary before our municipalities began to insist on reinspection?

Why do we need more cause for reinspection of electrical wiring?

There are still people who think that if we talk about the dangers of electricity people will not use the service. How many people refuse to use elevators because of reinspection?

We must admit that electricity is dangerous and do everything within our power to make it safe—and reinspection in that connection is essential.

#### ELECTRIC RANGE PROMOTION

**R**EPORTS from manufacturers indicate that this will be a record year in electric range production. It has been estimated that the sales this year will exceed 150,000 ranges. How will these ranges get into the hands of the public?

Since the retailing for the most part will be done by the power companies, it must be obvious that the method which will dispose of the ranges most quickly will be used. Whirlwind campaigns with inducements of one form or other seems to be indicated.

This, however, is no way to build a permanent and continuing range demand. Therefore, we urge the manufacturers to engage in a campaign of public education. To finance the campaign we suggest that range prices be increased five dollars and the money used for this purpose.

On the basis of this year's volume this method would raise three-quarters of a million dollars and a whole lot of public education can be done with such a sum of money.

The contractors, of course, are greatly desirous of seeing a range market that grows steadily. A campaign this year would offer no problem but normally a range campaign of any proportions is not very profitable to the worthwhile contractors. It means a peak of special business taken at a close price which if attended to as desired by the power company means that the contractors must neglect their own regular business.

It is hoped that the manufacturers as a protection of future growth will take the necessary cooperative action to create public demand and make inducement and campaign selling unnecessary.

# \\ code chats ///

A MONTHLY DISCUSSION OF WIRING PRACTICE AND QUESTIONS OF INTERPRETATION, PRESENTED WITH A VIEW TOWARD ENCOURAGING A BETTER UNDERSTANDING OF THE NATIONAL ELECTRICAL CODE

CONDUCTED BY F. N. M. SQUIRES  
CHIEF INSPECTOR, N. Y. BOARD OF FIRE UNDERWRITERS

## INSULATION RESISTANCE

*The inspection department claims that there are some grounds on an installation of No. 14 duplex lead cable which we ran in iron conduit, although we tested for grounds and shorts, with a Weston voltmeter, also with a Roller-Smith circuit-tester in ohms, and found same clear.*

*What do the Underwriters allow in this case for insulation test?*

Section 513 of the 1933 Code gives a table of resistances to apply to a completed installation. This, for an installation having a load of 5 amp. is 4,000,000 ohms, for 10 amp. 2,000,000 ohms, 25 amp., 80,000 ohms, etc. If an installation of the size given shows insulation resistance as stated in the table, there should be no question of grounds.

Underwriters' Laboratories advise that they require No. 14 rubber covered wire, in a 1000 ft. piece, to show 1500 megohms resistance.

## UNDER-FLOOR RACEWAY CROSSING MARKERS

*Rule 506-(f) states that where a duct line is interrupted by another duct line, but continues in a straight line beyond, and has junction boxes or outlets on either side of the crossing line, no markers shall be deemed necessary at the interrupting point.*

*What does it mean by "where a duct line is interrupted by another duct line in a straight line"?*

*If it was done this way, I should think they would only have to use a coupling and put a marker at the ends.*

506-(f) means that where under-floor duct lines cross each other but no outlet is needed at the point of

crossing, there need be no marker at this point in as much as the point of crossing can easily be found from the line up of the outlet or junction boxes on all sides of the crossing.

## A. C. GENERATOR PROTECTION EXEMPTION

*Why does 1002-b exempt a. c. generators from the same protection as d. c. machines?*

Due to their peculiar characteristics alternating current generators are not subject to overcurrents or short circuits as is the case with direct-current machines. Because of this over current protection is not required.

## GROUNDING CONDUCTOR SIZE

*Is it permissible to use No. 6 1-wire bare armored cable ground, also No. 8 bare for service? We are interested mostly in the bare armored cable due to the large saving in cost.*

According to rule 908-h (1933 Code) a bare wire may be used as a grounding conductor where,—

1. It is used as a common grounding conductor for both system and equipment grounding.

2. It is not smaller than No. 4 when unprotected by conduit or cable armor, or, if protected by conduit or cable armor, is of a size required by rule 908-k or 908-l, whichever calls for the larger conductor.

Therefore, a bare unprotected wire to be used as a grounding conductor must be at least No. 4, and an armored (protected by conduit or cable armor) wire must be at least No. 8 (to comply with rule 908-l).

## FEEDER SIZE FOR COMBINED LIGHT AND POWER

*Rule 808-(a)-3 reads: "Feeder conductors supplying a combined lighting or lighting and appliance load and a motor load, shall have a minimum current carrying capacity equivalent to the required capacity for the lighting and/or appliance load, plus the motor current load determined in accordance with the preceding provisions of this paragraph, or those for single motor loads in the following paragraphs."*

*How is this done?*

*Can demand factors be used on this?*

The feeder load of the lighting circuits is to be figured from the provisions of Article 20. Where demand factors are allowed in Article 20 they may apply here. Then to the figures for the foregoing feeder load is to be added the motor load figured from Section 808. A demand factor for the motor part of the load is allowed only by permission of the inspection department having jurisdiction as provided in 808-a-2.

## CORRECTION IN CODE

Chairman A. R. Small, of the Electrical Committee, calls attention to an error in the 1933 Code which appears in the example following sub-paragraph 1 of paragraph a, Section 808,—

"The original copy for the paragraph following the caption Feeder Protective Devices on page 108 of the text gave the sum of the three full load currents as 176 amperes, in view of which sum a fuse of 200 ampere rating would be called for. In going over the copy for the printing

*Electrical Contracting, June, 1934*

# The "CIRCLE T" All-Inclusive Line

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## Wiring Plans



Safety Switches for Main and Branch Circuit Sectionalizing with step-type Bus-Bar for grouping.



Dead Front "R.B.I." Switchboard.



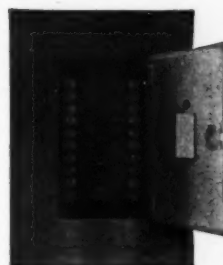
From the largest switchboard to the smallest heavy duty Tumbler Switch, the "Circle T" line offers the necessary equipment for all types of lighting and power distribution. A suitable electrical distribution system is a necessity for proper control and limitation of voltage drop.

In re-wiring or modernizing, for adequate illumination and motor control—consider the Trumbull line.

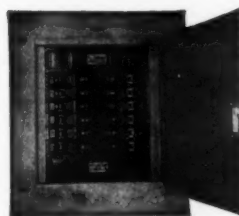
Literature is available on all products and our specialists are always at your service in the planning of distribution layouts.



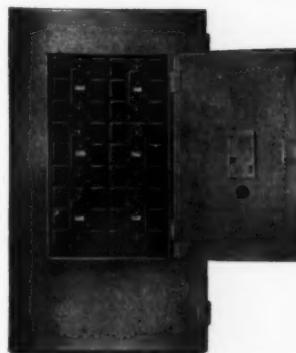
Heavy Duty Tumbler Switches with and without overload protection.



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Conver-ti-fuse Distribution Panels.

# THE TRUMBULL ELECTRIC MFG. CO.

PLAINVILLE, A GENERAL ELECTRIC ORGANIZATION CONN.



## PROFIT BY USING GREENLEE TOOLS

**T**HE greater the efficiency of the tools you use, the more chance you have for meeting competition and for making a profit on each job. That is where Greenlee Conduit Benders and Knockout Tools come in. They cut costs on every job where they are used.



### Hydraulic Conduit Benders

Greenlee Hydraulic Conduit Benders insure profits because they bend conduit quicker and easier than by other methods. In addition, they make smooth, even bends, eliminating many fittings and making it easy to pull in wire. They are easy to take to the job, too, because they are portable.



### Knockout Tools

Greenlee Knockout Punches and Cutters make it easy to enlarge holes in switch boxes, cabinets, etc. They form clean-cut holes quickly and accurately, without any reaming or filing.

### Other Tools

Hydraulic Pipe Pushers  
Joint Bore Bits  
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6-34

of the final edition of the Code, an error in addition was observed and the corrected value of 174 amperes put in the text. The editor did not observe that the change called for a corresponding change in the rating of the fuse. A 175 ampere fuse would be satisfactory."

### MOTOR CIRCUIT SWITCH vs. GENERAL USE SWITCH

*In 1005-(d), what is the difference between a motor circuit switch and a general use switch?*

*Would a compensator, oil-starting switch, and a starting switch with a thermal cutout be considered a motor circuit switch?*

*Is an ordinary knife switch considered a general use switch?*

The differences between a motor circuit switch and a general use switch are clearly stated in the definitions of each in Article 1.

Both of these types are motor circuit switches. When used as controllers they require disconnect switches ahead of them.

An ordinary knife switch is a general use switch.

### HEAT RESISTING FLEXIBLE CORDS

*Flexible cords AFC and CFC just state that they are heat resisting cords in table on page 78 of the Code. It does not state whether rubber is used or not.*

Heat resisting flexible cords, type AFC and CFC, etc., do not contain rubber.

### SOCKETS IN BASEMENTS

*Would a porcelain key socket be considered a weatherproof approved socket as called for in 1405-c for damp places?*

*Could a porcelain socket be used in the cellar of a house? They allow them in our city.*

The rule referred to requires that weatherproof sockets be used in damp locations. All basements or cellars are not always damp, but inspection departments quite generally prohibit the use of brass shell sockets in basements especially over cement floors. In order to substantiate this they quote rule 1405-c and argue that all floors below ground level are "considered" damp.

The real reason for the prohibition of brass shell sockets is because of danger to life and this hazard is practically eliminated by the use of porcelain sockets. While all porcelain sockets are not approved as "weatherproof" they do not present the same danger that the brass shell type does.

Inspection bureaus, therefore, should be encouraged to require other than brass shell sockets although the conditions encountered may not be sufficient to require weatherproof construction throughout. Porcelain or bakelite sockets should be safe. Several key or pull sockets of the weatherproof type are listed as approved.

### CONTROL METHODS FOR HEATING APPLIANCES

*It seems that 1602-d is like rule (a) because an attachment plug could be used as well as stated in this rule.*

1602-a is a requirement for a control for appliances of over 1650 watts while 1602-d is a requirement that each portable appliance regardless of capacity shall be equipped with a plug connector.

### WIRES IN REAR OF SWITCHBOARDS

*Rule 1302-d states that insulated conductors where closely grouped as in rear of switchboards shall have a flame-retarding covering.*

*Would this be slow burning wires?*

If the wiring running to and from the switchboard in question is of the slow burning type this has sufficient "flame-retarding" quality to meet the requirement. However, generally the wires are rubber covered and this rule requires that for the old style rubber covered wire an asbestos tape or sleeve would have to be placed over the conductors. But with the present day rubber covered wires, with flame retardant braid as required by 602-d this extra flame proofing would not be necessary.

### USE OF R.C. FIXTURE WIRE

*Does 1402-d mean that no R. C. fixture wire can be used in dry places such as for residences, etc.? Where it is allowed in (d) would type FF have to be used?*

The use of rubber insulation on fixture conductors is now prohibited where the fixtures are installed in



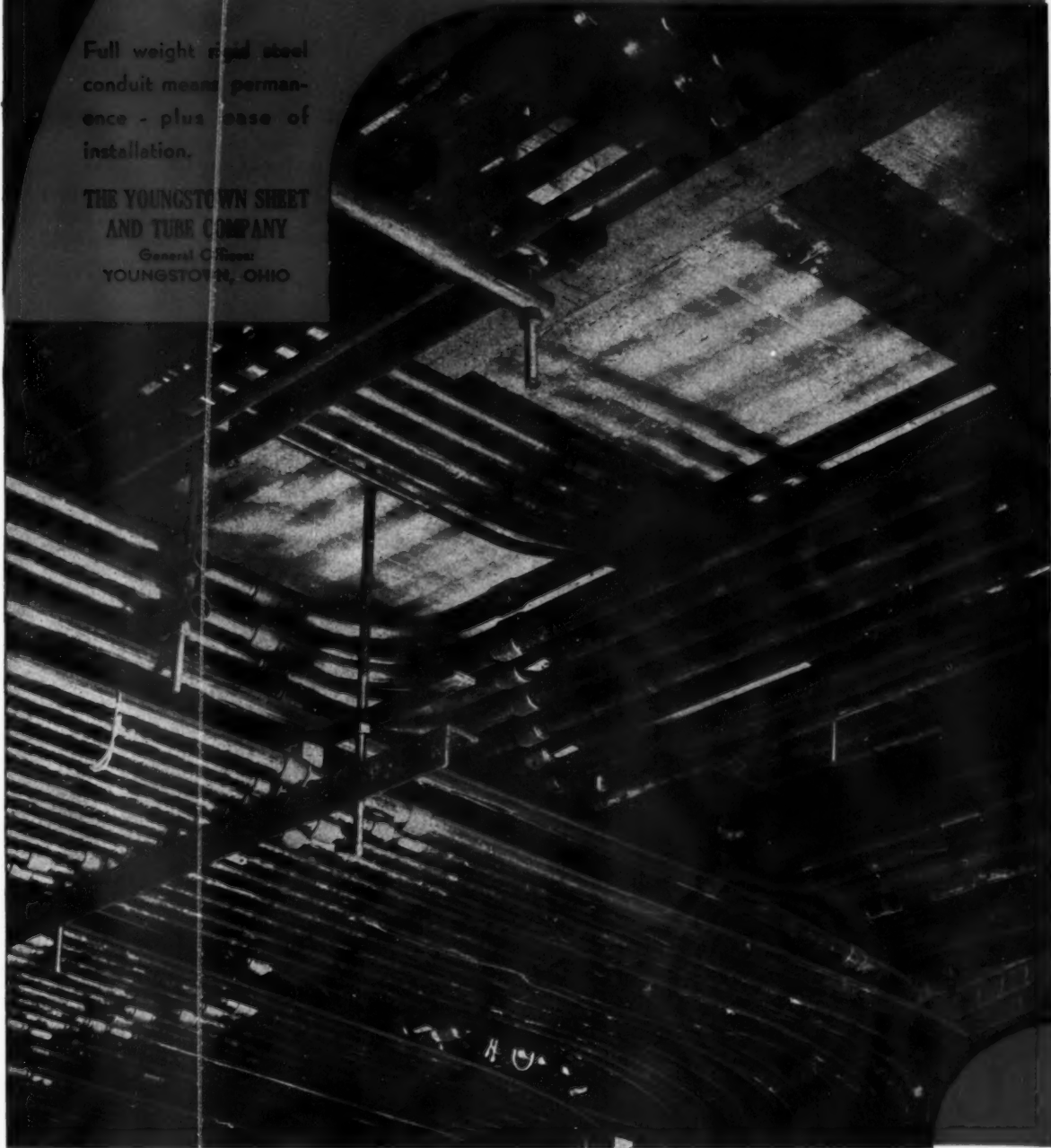
# Youngstown

## Buckeye CONDUIT

BLACK ENAMELED ELECTRO OR HOT DIPPED GALVANIZED

Full weight rigid steel  
conduit means perman-  
ence - plus ease of  
installation.

THE YOUNGSTOWN SHEET  
AND TUBE COMPANY  
General Office  
YOUNGSTOWN, OHIO



## IMPORTANT INFORMATION ON HAZARDOUS LOCATION WIRING ... IN THIS BULLETIN



**B**ULLETIN 1003, contains interesting and valuable information on Hazardous Location Wiring and all types of Appleton Explosion-Proof Unilets. Write for your copy today!

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Hazardous locations require the best in explosion-proof fittings. The dangers to life and property, as well as lowered insurance rates, are two important reasons. Appleton Explosion-Proof Unilets have undergone exhaustive tests and practical usage, and meet the requirements of the Underwriters' Laboratories for use in hazardous locations. They are made of malleable iron, give thorough protection, are sturdy, and the Cadmium Finish makes them rust resisting.

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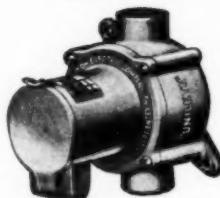
Explosion-Proof

# UNILETS

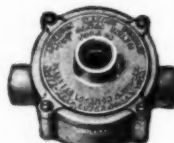
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Type "EVA"  
Explosion-Proof  
Lighting Fixture



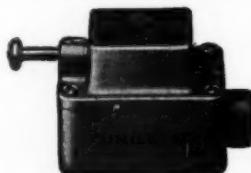
Type "CPSIC"  
Unilet Complete with  
Lift Cover (Closed)



Type "BFGSC" Ex-  
plosion-Proof Unilet



Type "C"  
SW-7 Unilet with  
Reciprocating Heater Switch



Type "EFS" Unilet with  
Tumbler Switch and Push-  
Pull Rod

a dry location except that on fixtures of the imitation candle type where lamps of 60 watts capacity or less are used, rubber insulation may be used. Rubber insulation is also permitted on portable table and floor lamps. Type FF could be used provided the wire was not larger than No. 18.

### WHAT ARE AUTOMATIC OVER- LOAD PROTECTIVE DEVICES

*In the first column of 908k there is given the capacity of automatic overload protective devices. Would a fuse be considered an automatic overload protective device, or an automatic cutout as mentioned in 908-e? I always thought an automatic device was a circuit-breaker, yet fuses are used more.*

Both fuses and circuit-breakers come under the classification of "automatic over-current protective devices." "Automatic cutout," as mentioned in 908-e is merely a short term for the same thing. Circuit-breakers if used in lieu of fuses shall be of a type specifically approved for this purpose.

### CRITICAL TEMPERATURE FOR RUBBER INSULATION

*Rule 1505 refers to Article 6 in regard to the proper cord to use for lamps, but how can you tell what type to use for a certain temperature, etc.?"*

While some information is given in the fine print notes following the captions of 604 and 605 the critical temperature for rubber insulation is 120 deg. F.

Where temperatures above this figure are encountered rubber covered wires should not be used.

### RECEPTACLES WITH OPEN WIRING OR WOOD MOULDING

*Does 1405-g mean that a box with a flush receptacle would have to be used on a cleat or wood raceway job for portable cords?*

No. Metal outlet boxes, similar to those used for cable or conduit, are not used on open wiring nor wood moulding jobs. 1405-g means that screw shell receptacles or socket shall not be used for the attachment of portable cords. Only receptacles of the plug type should be used.

# 4 Outstanding Switches in ONE for



CATALOG NO 1311

● Economy and progressiveness demand a simplification of today's switch problem—the 1311 Line of P&S Despard switches has been designed for just this purpose—to present an unusually wide range of usefulness.

● Not two or three types of switches for different installations, but one type of switch for most purposes.

● An all Bakelite, Type "C" switch that can be installed as economically in new building work as the old porcelain cup switch.

● A flexible switch that can be assembled with other P&S Despard wiring devices *right on the job*—that's where it shines for modernization work.

● And for specification work—that's "right up its alley"—the way the totally-enclosed, arc-snuffing mechanism "can take it" is just nobody's business—and it's available in both standard and lock types, too.

● And speaking of maintenance, end the annoyance of constant switch burn-outs. Replace with the switch especially designed to meet today's Type "C" lamp load requirements.

● Write for your copy of MODERN MAGIC—it will interest you.

**PASS & SEYMOUR, INC.**  
SOLVAY STATION SYRACUSE, N. Y.

**P&S-DESPARD LINE**

## NEW BUILDING



## MODERNIZATION



## SPECIFICATION

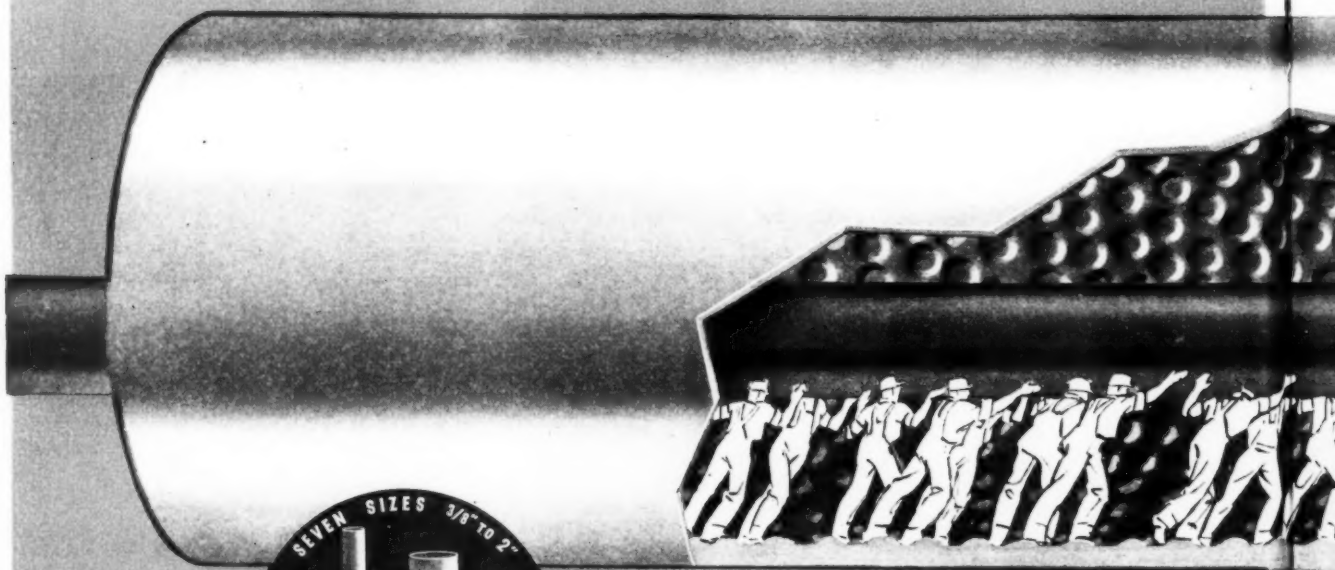


## MAINTENANCE



**THOUSANDS OF LITTLE  
HELPERS MOVE CABLE  
EASIER AND FASTER IN  
ELECTRUNITE** *Steeltube*

REG. U. S. PATENT OFFICE



*Electrical Division*  
**STEEL AND TUBES, INC.**  
WORLD'S LARGEST PRODUCER OF ELECTRICALLY WELDED TUBING  
**CLEVELAND • • • OHIO**

A UNIT OF REPUBLIC STEEL CORPORATION



**SPEED** is the order of the day—even in electrical wiring. So Steel and Tubes, Inc., mechanized the new **ELECTRUNITE STEELTUBES** by rolling thousands of little helpers on the inside surface of every length—tiny round knobs that lift cable away from the wall of the conduit and cut down friction.

The idea was revolutionary, but tests quickly proved the fallacy of the old idea that conduit must have a smooth raceway.

And the tests showed that, because friction was reduced as much as 30%, far less effort and time were required to push or pull cable.

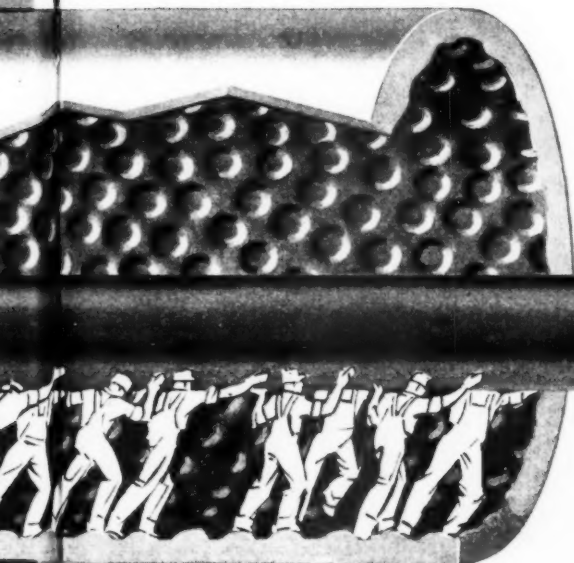
But this threadless rigid conduit brings to

the electrical contractor other modern features that mean more money in his pocket. Because of its lighter wall, it cuts and bends faster and easier. It requires no threading—just simple fittings slipped over the end and tightened. Yet it affords full electrical and mechanical protection and is approved by the National Electrical Code and for Government work. It may be used for open and concealed work (except in cinder fill), for service conductors on exterior building walls and entering buildings, for voltages up to 600, and with conductors up to No. 4.

Contractors on the lookout for electrical metallic tubing that will help the profit account should investigate. A letter will bring you facts.

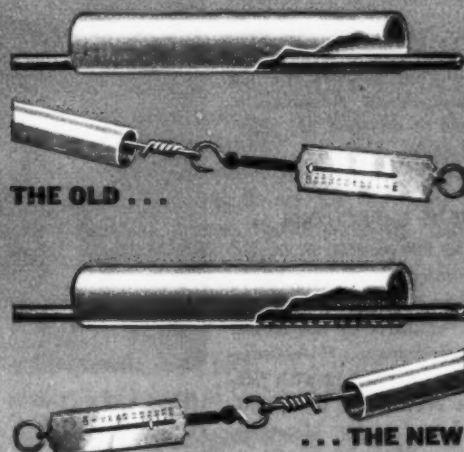
# tubes

*Electrunite Steeltubes Conduit with the new knurled inside surface is available in ½", ¾" and 1" sizes.*



*Patent applied for*

The old premise that the inside of conduit should be as smooth as possible has been proved wrong. The cable in smooth finish conduit makes contact throughout the entire length, results in high friction, and requires more effort to pull cable through. Electrunite Steeltubes Conduit with the knurled inside finish showed by actual test a saving of 30 per cent in the effort required to pull cable through. The cable rides the tops of the tiny knobs instead of making contact the entire length.



# CONTRACTING news

INFORMATION OF INTEREST TO ELECTRICAL CONTRACTORS  
CONSISTING OF ITEMS OF NEWS, SHORT ARTICLES, PRACTICAL  
IDEAS, ETC., OUR READERS ARE INVITED TO CONTRIBUTE TO  
THIS DEPARTMENT

## SUB-COMMITTEE ON DIFFERENTIALS MEETS

A meeting of the sub-committees representing N.E.C.A., N.E.M.A. and N.E.W.A. in the matter of adequate recognition of the contractor in the sale of electrical material, particularly to the industrial, was held in New York City on May 29.

The following represented their respective associations at the meeting: R. W. Edwards and G. C. Thomas, Jr., manufacturers; George Cullinan, Fred R. Eiseman, wholesalers, and Ralph Walker and H. B. Frazer, contractors.

## W. J. DONALD NEW MANAGING DIRECTOR N.E.M.A.

President J. S. Tritle of the National Electrical Manufacturers Association has announced the resignation of Managing Director A. W. Berresford.

W. J. Donald, formerly vice-president and managing director of the American Management Association, has been elected to succeed Mr. Berresford as managing director.

## BUSINESS IS IMPROVING

One index to the condition of the market for wiring is the record of electrical permits issued. Such a record is printed regularly by the News-Bulletin of the International Association of Electrical Inspectors with permit figures for New York City, Chicago, Detroit, Los Angeles, Minneapolis, New Orleans, Kansas City, Portland, Ore., Denver and Jacksonville.

Until this year the figures have, on the whole, been decreasing. Now there is a very definite upward trend in the number of permits issued.

The latest News-Bulletin gives the figures for February and March. The permits in February were 2 percent more in number than those of February, 1933, while the March permits were ahead of last year by 20 percent.

These figures, of course, are merely indicative of the number of projects going through and have no bearing on volume of work.

## ONE OUT OF THIRTEEN CHICAGO FIRES ELECTRICAL

Chicago had 651 fires of electrical origin in 1933 with a total known loss of \$173,335, according to the fire report of the Bureau of Electrical Inspection for that year. In addition there were 52 fires of unknown but of possible electrical origin with a loss

of \$101,575. The electrical fires represented 7.1 percent or one out of every thirteen investigated fires in the city. The 1933 electrical fires resulted in three fatalities.

An analysis of these electrical fires follows:

	No. of Fires
(a) Improper installation including tampering by the incompetent.	160
(b) Failure to provide approved enclosure, guard or pilot lamp.	45
(c) Overloading or overfusing.	0
(d) Failure to replace or repair equipment injured or worn out in service.	109
(e) Failure to keep clean, dry or handle with care.	38
(f) Manufacture defective.	2
(g) Electrical origin; details of cause unknown.	40
(h) Motor and other winding failures.	110
(i) Electrically heated appliances or devices including lamps left in circuit, unattended, in contact or too close to combustible material. (No code violations.)	116
(j) Ignition of inflammable materials being used temporarily in the vicinity of electrical equipment. (No code violations.)	5
(k) Storms—unusual occurrences or conditions.	26
Total.	651

## ATTEMPT TO BRING REPAIR SHOPS UNDER CONTRACTORS' CODE

The membership of the N.E.C.A. conducting motor repair and service shops have been balloting on a supplementary code to the Electrical Contractors' Code of Fair Competition with certain amendments regarding the application of the labor clauses. In a letter sent out by J. R. Stolzenbach, chairman, National Motor Section, N.E.C.A., it was stated that with few exceptions the contractors' code includes all the requirements needed for a Code of Fair Competition for the motor repair and service shop industry.

A separate service shop code has been proposed by a new organization, The National Industrial Electric Service Association, but being unable to show that its membership adequately represented the industry it has not been able to make very much progress. Of late, the activity has attempted to include mechanical as well as electrical service shops. This, however, has not met with the approval of a great many electrical contractors who operate repair shops.

To cover the repair shops it is suggested that Article II of Chapter VI



**HEADS ESSEX LEAGUE:** John J. Caffrey, Jr., of Buhl & Caffrey, Inc., Newark, N. J., is this year president of the Essex Electrical League and is also active in local contractor group activities. In addition to his league activities he is on the job every day selling the services of his firm which has done a large part of the large installations in the Newark area and at the present time is engaged on a government building job in Newark.

**PAY CHECK**

WEEK ENDING August 4, 1934

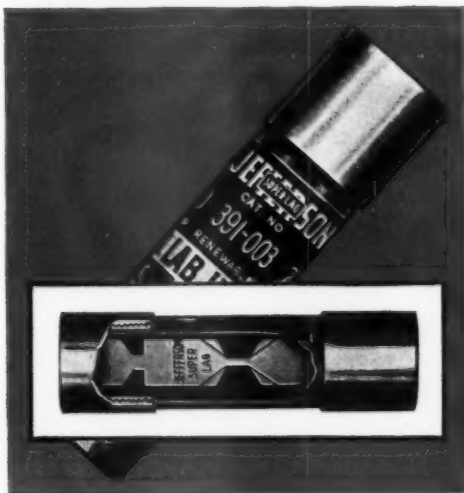
Pay to order of Joe Andrews \$ 15.00

J. Sturbing

**FIRST NATIONAL BANK**  
OF MINNEAPOLIS, ST. PAUL, DULUTH, S. DULUTH, MINN.

**HELP CUSTOMERS  
REDUCE OUTLAY FOR  
STOPPED TIME**

The secret of Jefferson Super-Lag performance lies in the lag plate which is a part of the Super-Lag link. This plate delays the normal fuse action, provides a time interval or lag. This time-lag prevents the fuse from blowing on harmless temporary overloads—saves needless shutdowns and link replacements.



Your customers must pay for "STOPPED" time—and the price is high whether the stop is necessary or needless. Increase your fuse sales by pointing out that needless stops can be greatly reduced with fuses that protect TIME as well as motors.

Jefferson Super-Lag Renewable Fuses protect time. They provide reliable, accurate protection—riding over harmless, momentary surges—operating positively on extended, dangerous overloads. There is no better protection for electrical equipment and property—and against payroll loss for STOPPED TIME. There is no better way to increase your fuse sales than pushing Jefferson Super-Lag Renewable Fuses.

Made in all capacities—knife-blade and ferrule types.

**JEFFERSON ELECTRIC COMPANY**  
Bellwood (Suburb of Chicago) Illinois



**JEFFERSON**  
**Super-Lag**  
RENEWABLE **FUSES**



# The ENEMY of Old Fashioned Selling



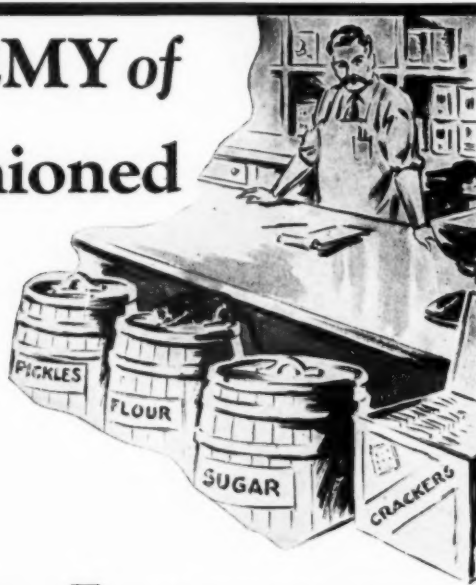
This illustration shows but two sides of the new metal revolving Dispenser. The other two compartments contain the 5c and 35c rolls... a well balanced assortment of all four sizes. The Dispenser is lithographed in three colors and contains many suggestions for the use of DUTCH BRAND Tape around the home and car, in the shop and for sports purposes.

**DUTCH BRAND RUBBER INSULATING TAPE**  
Fuses instantly without heat. Molds into one solid piece. It stretches without breaking because it contains more live, new rubber.

## VAN CLEEF BROS.

Established 1910

Manufacturers Friction and Rubber Tape and Soldering Paste  
Woodlawn Ave., 77th to 78th Streets, Chicago, U. S. A.



THE old flour and pickle barrel are gone forever, along with the drooping black mustache and the hitching post. Gone also is the practice of keeping Friction Tape out of sight. The modern way... the DUTCH BRAND way... is to display Friction Tape where it can be seen... with the new DUTCH BRAND Friction Tape Dispenser.

Don't make your customers ask for Tape. Remind them to buy it. You will sell hundreds of rolls that otherwise would not be sold... and it is these plus sales that you make with the DUTCH BRAND Friction Tape Dispenser that will increase your Tape profits more than 100% a year.

Use this "Extra-Service" tape for your own work, too. It will save you money.

**DUTCH BRAND Friction Tape, Rubber Tape and Soldering Paste are sold by electrical jobbers everywhere.**

**DUTCH BRAND SOLDERING PASTE**

A scientific mixture—non-corrosive. Cleans as it works. Holds solder fast. Less paste required per job.

**THE JUMBO PACKAGE**

Contains 10 standard No. 8 rolls. The economical way for repairmen, electrical contractors and industrial users to purchase Friction Tape where individually cartoned Tape is not required.



(the electrical contractors' chapter) of the Construction Code be amended as follows:

Section 12 to be renumbered 14 and two new sections, 13 and 14, inserted as follows:

"Section 12. The provisions of Section 1 and Section 3 of this Article II shall not apply to the hours, wages and conditions of employment of employees engaged in the Electric Repair and Service Shops Subdivision."

"Section 13. (a) The maximum hours fixed in Section 2 B of Article III of Chapter I of this Code shall not apply within the Electric Repair and Service Shops Subdivision to any employee on emergency maintenance or emergency repair work involving breakdowns or protection of life or property, or to any specially skilled employee in emergencies occasioned by the necessity for services of such employee which cannot be cared for by the employment of additional men. In any such case at least one and one-half times the regular rate shall be paid to employees for time worked in excess of the maximum provided in Section 2 B of Article III of Chapter I.

"(b) The maximum hours fixed in Section 2 B of Article III of Chapter I of this Code shall not apply within the Electric Repair and Service Shops Subdivision for six (6) weeks in any twenty-six (26) weeks, during which overtime shall not exceed eight (8) hours in any one week. In any such case at least one and one-half (1½) times the regular rate shall be paid to each employee for time worked in excess of forty (40) hours per week or in excess of eight (8) hours in any twenty-four (24) hour period."

\*Note: This will make minimum wages of forty (40) cents and maximum hours of forty (40) hours, as provided for in Chapter I of Code, apply within Electric Repair and Service Shops Subdivision, except as modified by new Section 13 (a) and (b).



**SPECIALIZED FROM THE START:** Richard T. Stith, head of the National Electric Service Co., St. Louis, Mo., began business in 1923 as an industrial specialist and built up a large clientele by studying factory problems. "Just tell us what you want and where to put it," is the slogan. He has had as high as 85 per cent time and material and enjoys a large maintenance volume.

See the DUTCH BRAND EXHIBIT at A CENTURY of PROGRESS • CHICAGO • 1934



## THERE'S PROFITABLE BUSINESS IN G-E SPECIALTY TRANSFORMERS

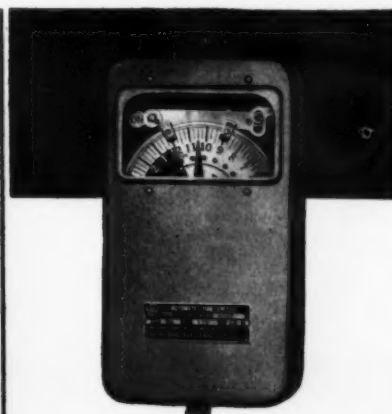


**It's small  
Easily installed  
Put it anywhere  
No inspection  
No maintenance**

**G-E** SPECIALTY transformers provide the most economical method of obtaining the right voltage for such applications as those listed above, and for sign lighting, airport lighting, operation of 32-volt portable lamps and tools, etc.

These transformers are economical to operate because of their high efficiency. They are easy to install and, being compact, may be placed anywhere; require no fireproof vaults, since they are air-cooled; and are neat in appearance. Service records show that they need practically no inspection or maintenance.

Now is the time for contractors to cash in on the profitable business of installing these transformers. Call the G-E Supply Corporation or the nearest G-E sales office for further information, or mail the attached coupon for a bulletin which gives descriptive and application data.



## YOU CAN WIRE G-E TIME SWITCHES AND FORGET THEM

**R**EPEATED service calls to wind time-switch clocks, set time, lubricate bearings, and free sticky contacts — jobs for which no profit entry will appear in the ledger — are no longer necessary.

G-E general-purpose time switches are designed to eliminate such "profit-gobbling" service calls. All you have to do is "wire them and forget them."

We don't say bring your time-switch "problem" to us. On the contrary, make no problem of it. Order a time switch from the G-E Supply Corporation (you will receive it promptly), install it, and forget it. If you would like further information, call the nearest Supply Corporation or G-E sales office, or mail the attached coupon.

# GENERAL ELECTRIC

General Electric Company  
Dept. 6P-201, Schenectady, N. Y.

Time Switches ☐

Air-cooled Transformer ☐

Please send me descriptive and application data on the products I have checked above.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street \_\_\_\_\_

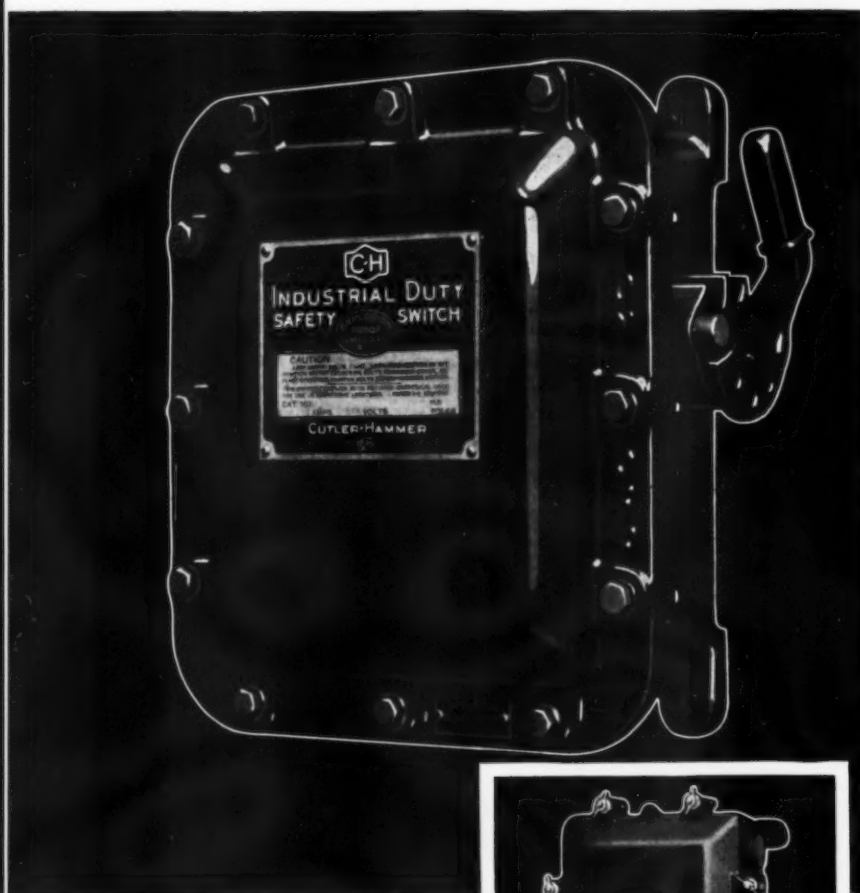
City \_\_\_\_\_

State \_\_\_\_\_

330-33

C-H AGAIN DEMONSTRATES LEADERSHIP WITH

# NEW EXPLOSION-PROOF SAFETY SWITCH LINE



The new C-H Explosion-proof Switch for Class I, Group D locations. Meets all requirements. Made in 30, 60, 100 and 200 ampere sizes, single and double throw types.

For the lesser hazards of explosive dust, lint, etc., Class II, Group G, there are also available the tried and respected C-H Dust-tight, Weather-proof Switches in single throw type, 30 to 200 ampere sizes.



# CUTLER HAMMER

For service under the exacting requirements of Class I, Group D—embracing such hazards as gasoline and alcohol fumes—Cutler-Hammer presents a new explosion-proof safety switch line complying with Code requirements and raising performance standards to new high levels.

As might be expected of C-H, "compliance with requirements" is an under-statement. Here as elsewhere Cutler-Hammer exceeds bare minimums not only with respect to details that mean safety—accurately machined joints of required width, ample case strength, etc.—but also include features that mean performance, such as time-tested switching mechanisms.

These newer switches, like all C-H Controls, are the distilled products of the electrical industry's greatest specialized control background—the result of Cutler-Hammer's Motor Control success in every electric-powered industry—an unlimited reservoir of experience insuring that C-H products will give unmatched service, and will earn highest prestige and profit for their seller.

Complete stocks of C-H Safety Switches are carried by responsible independent wholesalers. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus*, 1306 St. Paul Ave., Milwaukee, Wis.



B-241



**HAS FINE RECORD ON LARGE WORK:** For over 20 years the Squire Electric Co., Kansas City, Mo., has been making outstanding installations in large buildings and industrial plants, including 25 sub-stations. Left to right: W. J. Squire; Wallace Piper; Lura Voss, and C. F. Miles. Mr. Squire is actively interested in new electrical developments, from both the engineering and sales angles, and has made addresses in various cities.

#### LOUISIANA INSPECTORS TO EDUCATE PUBLIC TO HAZARDS

At a recent meeting of the Louisiana Chapter of the International Association of Electrical Inspectors it was voted to request permission to give in the schools a lecture program with practical demonstrations of electrical hazards. A committee has been appointed to work out such a program.

#### HOLD ANNUAL CONVENTION IN JUNE

The New York State Association of Electrical Contractors and Dealers will hold its thirty-fifth annual convention at Higby Camp, Big Moose, N. Y., on June 18, 19, 20 and 21.

The morning sessions of the convention will be devoted to discussions of interest to the electrical contractors, manufacturers, jobbers and public utilities, and many prominent speakers will address the convention.

Arrangements have also been made for entertainment such as boating, swimming, tennis, golf, fishing, etc., for those who attend the convention.

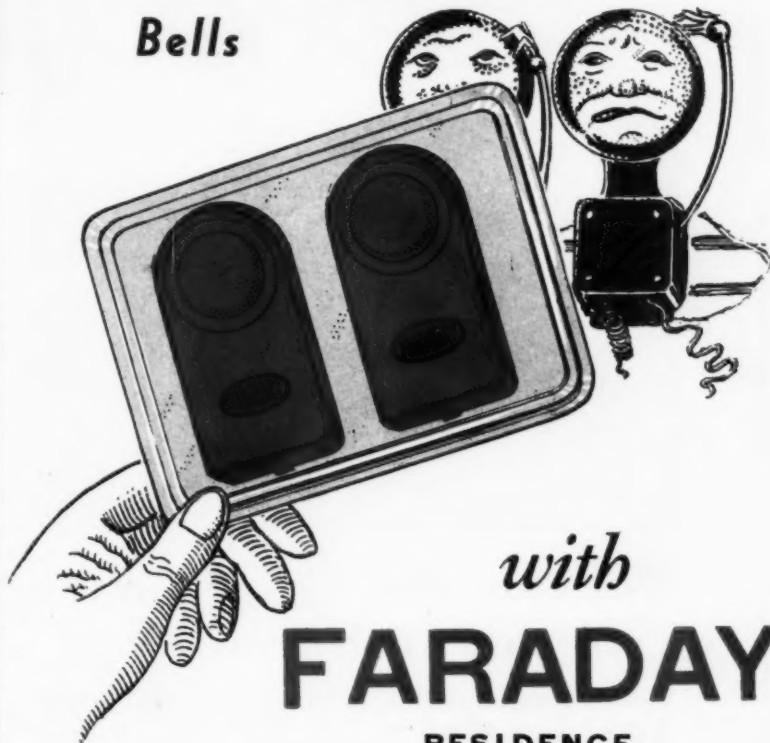
#### NEW N.E.C.A. CHAPTERS

Long Island Master Electrical Contractors Association, Inc., covering jurisdiction over the interests of its own membership in the Borough of Queens, New York, to be known as Long Island Master Electrical Contractors Chapter. Harold Story, 37-58, 58th St., Woodside, New York, President. Henry J. Hoffman, 104-29 109th St., Richmond Hill, New York, Secretary.

Wilkes-Barre Electrical Contrac-

## REPLACE

### Old and Out-of-Date Bells



*with*  
**FARADAY**  
RESIDENCE  
**CALL PANELS**  
*The MODERN ELECTRIC BELL*

**R**EPRESENTATIVE of the latest development in the bell field, their attractive appearance will be welcome in place of the old-fashioned bell-assembly now found in every apartment or home.

FARADAY RESIDENCE CALL-PANELS have hollow back-plates, formed with attractive, molded edges, completely covering up the ugly slack-wires, the broken and uneven plaster and the grimy outline of the old-style bells and buzzers. Units are completely insulated from back-plates. Covers enclose under their attractive glossy surface the entire mechanisms, as well as the gongs, binding-posts, etc., perfectly dust-proofing the units which consequently, can be easily kept clean. No mounting-screws show on surface of panel.

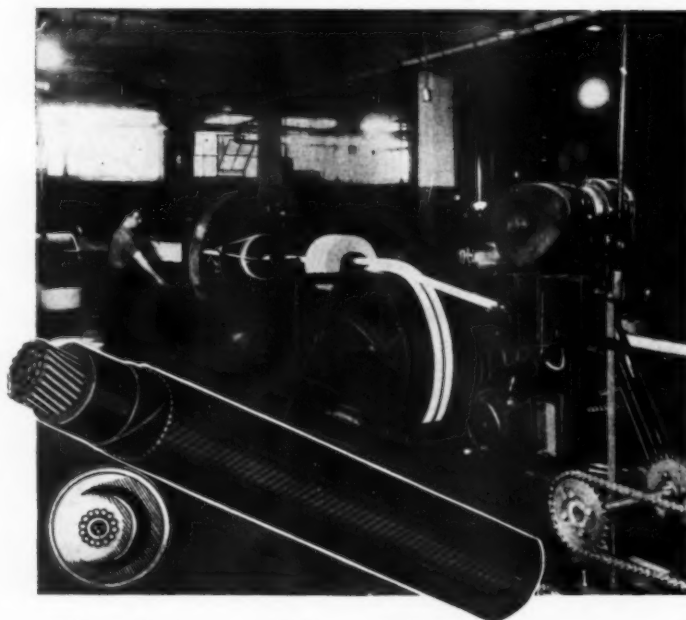
The standard color of BACK-PLATES of panels is IVORY, in color-harmony with wall of any kitchen or hall, while the COVERS of the different-sounding bells and buzzers are regularly furnished in JADE-GREEN, BLUE or IVORY as may be specified. Special color combinations furnished to order.

Send for bulletin 61-A.

**STANLEY & PATTERSON, INC.**  
150 VARICK ST. NEW YORK, U.S.A.



## Cause and Result



*Modern Machinery used  
in the production of*

# CRESCENT WIRE

*insures a quality product.*

*The cable insulating machine shown above, one of the largest and most modern of its kind, applies the rubber insulation to the larger sizes of cable, assuring perfect centering and highest electrical qualities.*

Crescent Wire and Cable is built to meet more than ordinary requirements. It must come up to our own rigid standards, laid down through 45 years of manufacturing experience.

You may handle Crescent Wire with the utmost assurance that its quality will never be questioned.

### CRESCENT PRODUCTS — a Complete Line

"Crescent" National Electric Code Rubber Covered Wire and Cable.

Intermediate Grade Rubber Covered Wire and Cable.

"Imperial" 90% Rubber Covered Wire and Cable.

"Crescent" Lead Encased Wire and Cable.

"Crescent" A. B. C. Armored Bushed Cable.

"Crescent" Lead Covered Armored Cable.

"Crescent" Flexible Metallic Conduit.

"Crescent" Varnished Cambric Cable, Lead Encased or Braided.

"Cresflex" Non-Metallic Sheathed Cable.

"Crescent" Flexible Cords.

"Crescent" Parkway Cables.

ALL KINDS OF SPECIAL WIRES AND CABLES

"Forty-Five Years of Knowing How"

# CRESCENT

## INSULATED WIRE & CABLE CO. INC.

TRENTON, NEW JERSEY



tors Association, covering jurisdiction of Wyoming Valley, Luzerne County, Penn. and immediately contiguous area, to be known as Wyoming Valley Chapter. Joseph H. Schmidt, 176 Park Ave., Wilkes-Barre, Pennsylvania, President. G. E. Shepherd, 123 N. Penn Ave., Wilkes-Barre, Pennsylvania, Secretary.

Lafayette Electrical Contractors Association, covering jurisdiction over the interests of its own membership in Tippecanoe County, Indiana, to be known as Lafayette Chapter. R. A. Brassie, 1022 Main St., Lafayette, Ind., President. L. M. Bowers, Jr., 227 N. 5th St., Lafayette, Ind., Secretary.

Electrical Contractors Association of Greater Boston, Inc., covering jurisdiction over the interests of its own membership in that part of Eastern Massachusetts known as Greater Boston, in Arlington, Belmont, Boston, Braintree, Brookline, Cambridge, Canton, Chelsea, Cohasset, Concord, Dedham, Dover, Everett, Framingham, Hingham, Hull, Lexington, Lincoln, Malden, Maynard, Medfield, Medford, Melrose, Milton, to be known as Boston Metropolitan Chapter. Herbert A. Holder, 67 Broad St., Boston, Mass., President. C. L. Heckman, 141 Milk St., Boston, Mass., Secretary.

Electrical Contractors Association of Springfield, covering jurisdiction over the interests of its own membership in Hampden County, Mass., to be known as Hampden County Chapter. William P. Collins, 92 State St.,



**ACTIVE IN ASSOCIATION WORK:** Harry L. Langer, member of the firm of Fishbach & Moore, Inc., New York City contractors, in addition to his active duties with the firm as buyer of electrical materials and equipment for the jobs always finds himself on different committees in the activities of the Independent Electrical Contractors' Association of New York.



*This*  
*Coupon*  
brings you this

Clip and mail to HART & HEGEMAN DIVISION, ARROW-HART & HEGEMAN  
ELECTRIC CO., Hartford, Conn.

(Your name) \_\_\_\_\_

(Name of Company) \_\_\_\_\_

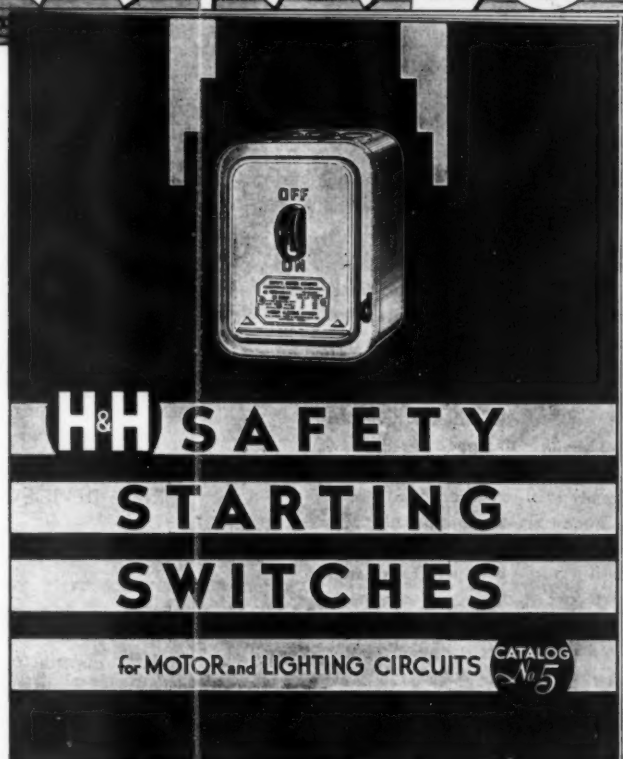
(Address) \_\_\_\_\_

(Town) \_\_\_\_\_

(State) \_\_\_\_\_

— would like a copy of  
the H & H Safety  
Starting Switch  
Catalog

# CATALOG



*of*  
**H&H**  
**Safety**  
**Starting**  
**Switches**  
*for*

## MOTOR *and* LIGHTING CIRCUITS

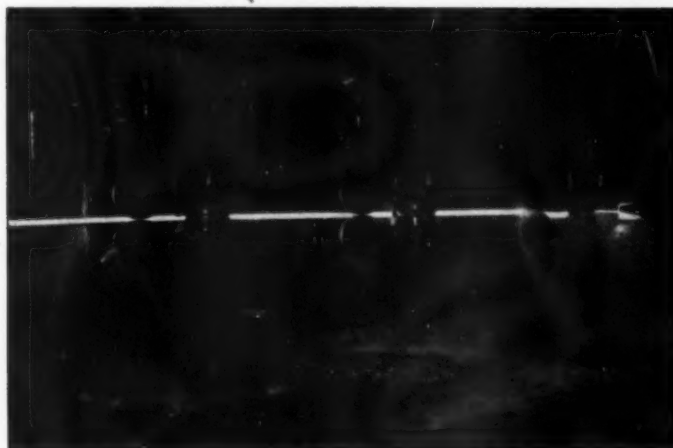
This book presents a line for the CONTRACTOR — comprising those types and ratings of Safety Switches for which you have a ready market . . . The line is built on an engineering foundation of 44 years of fine switch-making by H & H. » » » » »

Included are Enclosed Switches, Magnetic Motor Starters, Push Button Master Switches, Magnetic Contactors, Resettable Thermal Switches, Manual Motor Starters, Small Motor Starting Switches. MAIL COUPON for full presentation. » » » » »

**HART & HEGEMAN DIVISION**  
**THE ARROW-HART & HEGEMAN ELECTRIC CO. HARTFORD, CONN.**

NUMBER FOUR OF A SERIES OF ADVERTISEMENTS

## There is no chance for variation in FRETZ-MOON CONDUIT



THE illustration above shows the transformation of hot metal skelp into welded tubing, which, after following operations, will become Fretz-Moon Conduit in one of three finishes—black enameled, electro-galvanized or hot-dipped galvanized. • As the hot steel skelp leaves the furnace it is slightly above welding temperature—insured to the degree by automatic control. It enters the first two pairs of rolls which form it into an open seam tube. Then, as it enters the next two pairs of rolls and has dropped to exact welding temperature, the seam is closed under pressure and the skelp becomes a perfectly welded tube. The next two pairs of rolls form it to uniform size. • Perfection and uniformity are the standards to which Fretz-Moon Conduit is made. The "continuous process" with the most modern methods of speed and temperature control entirely eliminates the human element and the possibility of variation in the product. Every step in the process is rigidly controlled and perfectly synchronized with every other step. • Under such a modern method of manufacture, scientifically developed to produce nothing but a uniform product, it is not difficult to appreciate why Contractors who once give Fretz-Moon Conduit a fair trial continue to use it exclusively.

**STEEL AND TUBES, INC.**  
CLEVELAND • OHIO  
EXCLUSIVE SALES AGENTS

**FRETZ-MOON**

**Rigid  
conduit**



**CASHING IN ON INDUSTRIAL ACTIVITY:** Although strong for large residence wiring, P. F. Steppelman, Jefferson City, Mo., has also built up quite an industrial volume among breweries, ice plants, etc., especially since recovery started in earnest. On his left in the picture are Ray Alcorn and Grace Steppelman.

Springfield, Mass., President. Mrs. A. S. Kenney, 92 State St., Springfield, Mass., Secretary.

Pierce County Electrical Contractors, covering jurisdiction over the interests of its own membership in Pierce County, Washington, to be known as Pierce County Chapter. Robert Gleason, 937 Commerce St., Tacoma, Wash., President. Garnet I. Sovereign, 780 Commerce St., Tacoma, Wash., Secretary.

### TO INVESTIGATE CHAIN STORE WIRING DEVICE COSTS

Contractors will be interested in learning that the low prices quoted by certain wiring device manufacturers to chain stores is receiving the attention of the electrical manufacturers' code advisory committee. The following is quoted from the N.E.M.A. office bulletin:

"Price cutting on wiring devices sold to chain stores and certain independents have reached a point where there is no doubt that the goods are being sold at prices lower than costs in violation of the Basic Code.

"The Code Advisory Committee has determined that an investigation and audit is necessary to ascertain the facts in connection with costs in such cases where the specific information is sufficient on which to take action.

"Since the condition is tending to undermine Code operation the Code Advisory Committee has recommended that the Supervisory Agency immediately take the proper steps in conjunction with legal counsel to investigate the situation.

"The Code Advisory Committee further recommended that the expense of the conducted investigation be borne by the Code Authority."

# When You Figure on Panelboards and Switchboards, Use the . . . .

## **BENJAMIN** TRADE MARK **LINE**

Benjamin Panelboards and Switchboards have been long and favorably known to electrical contractors, architects, builders and building managers. They embody every good feature of ease of installation, convenience, rugged construction and dependable operation. Listed as Standard by Underwriters' Laboratories.

• • •

The line is complete, meeting all the various requirements of lighting and power distribution for residences, public buildings, automobile service stations and industrial buildings, including

Residence Panels—Fuse and No-Fuze Types.

Lighting—Fuse only, Switch and Fuse, and No-Fuze Circuit-Breaker Types.

Lighting and Power Distribution—Live Face, Dead Front (Safuswitch), and No-Fuze Circuit-Breaker Types.

Distribution Switchboards—Live and Dead Front (Safuswitch), and No-Fuze Circuit-Breaker Types.

• • •

Our Panelboard Engineering Department will be glad to assist in quoting on special panelboards, power panelboards, switchboards, metering panels or other special types of distribution centers, and in making suggestions for layouts using either standardized or special equipment.

• • •

Send for the Benjamin Panelboard Catalog and the bulletin on the new No-Fuze Circuit-Breaker Type Panelboards.



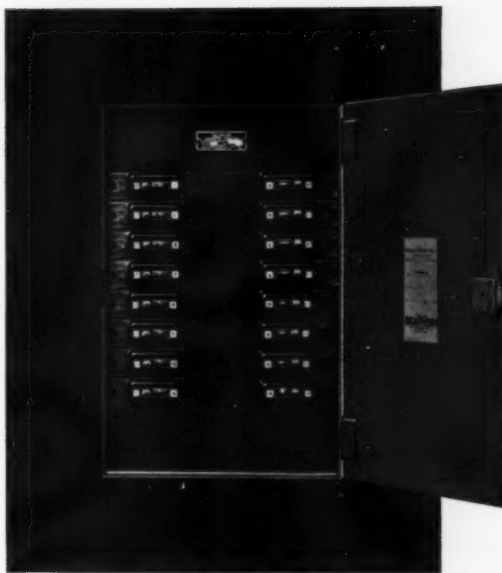
## **Benjamin Electric Mfg. Co.**

General Offices and Factory:  
**Des Plaines, Illinois**

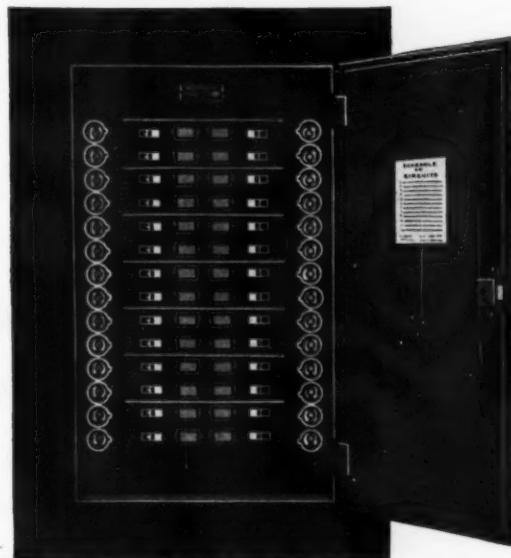
Divisional Sales Offices:  
**CHICAGO**

**NEW YORK**

**SAN FRANCISCO**



No-Fuze Circuit-Breaker Type Lighting Panel, Single-Door Cabinet, with Lock and Key.



Type NLPT Protective Panel, with Single-Door Cabinet.





## Outdoor FLOODLIGHTS *for every purpose*

**FOR LIGHTING**  
 Play Grounds  
 Parking Areas  
 Swimming Pools  
 Bathing Beaches  
 Tennis Courts  
 Pageants  
 Boat Landings  
 Air Ports  
 Bus Terminals  
 Gas Stations  
 Race Tracks  
 Stadiums  
 Baseball Fields  
 Buildings  
 Monuments, etc.

REQUIREMENTS vary—so Kliegl floodlights are made in many different types to best suit your needs; for close-range or long-range lighting, with a concentrated or wide-spread light beam—giving the maximum light, at a minimum cost. Tell us what you want to light, and the conditions prevailing—we'll gladly help you get desired results.

**NEW CATALOG**  
 If you haven't received our new Catalog B—send for a copy. It gives complete details on all our floodlights, and numerous other lighting units.

# KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.  
 321 WEST 50th STREET NEW YORK, N.Y.



KLIEGL OUTDOOR FLOODLIGHTS



Motorized appliances in use in homes and offices of the United States now number nearly 30 million. Many are old, millions need repair. There will be a large call for repairs in 1934.

Ohio Brush Kit—No. 1 contains replacement brushes and springs to fit 98% of the existing makes of appliances listed here.

With this kit you will have the right brush and spring without sending away or resorting to make-shifts.

Conveniently arranged—easy to use—easy to keep in order. Write today for prices—get ready for profitable repair work.

**THE OHIO CARBON COMPANY**  
 12504 BEREA ROAD CLEVELAND, OHIO

**30 MILLION  
 MOTOR APPLIANCES  
 NOW IN USE...  
 MILLIONS  
 NEED REPAIR**

**This Kit gives you  
 the right brush for**

VACUUM CLEANERS . . . FANS  
 . . . WASHING MACHINES . . .  
 SEWING MACHINES . . . BUFF-  
 ERS . . . DRILLS . . . DENTAL  
 MOTORS, ETC.



**CHAIRMAN OF SUCCESSFUL OUTING:**  
 S. J. "Steve" O'Brien, New York City, electrical contractor, was the general chairman of the annual outing of the Electrical Association of New York, held at the Westchester County Club in Rye, N. Y. The chairman with the assistance of the different committee members made this year's outing very pleasant to more than 400 contractors, wholesalers, manufacturers and utility men who attended.

### GASEOUS LAMP NOT TO REPLACE INCANDESCENT

The biggest improvements in the lighting industry will probably come from the light produced by gas and vapor discharges, declared Doctor Rentschler in a recent lecture on "The Future of Lighting" before the Illuminating Engineering Society. The gaseous lamp must evolve its own field of usefulness, however, for it cannot truly displace the incandescent lamp. In short, declared Doctor Rentschler, who is Director of the Research Laboratories of the Westinghouse Lamp Company, the incandescent lamp is not likely to be replaced by anything now in sight. Those are optimists who hope to see lighting intensities improved materially by gaseous lamps. No combination of gases has yet been found which will operate efficiently and satisfactorily and give at the same time true white light. Many gases radiate narrow bands of color which tend to distort the natural appearance of materials.

Carbon dioxide gas gives a nearly perfect white light for color-matching work, but as a light source its efficiency is very low—about 4 lumens per watt. The cost of operating such a lamp would be too great to be practical.

In the future, therefore, we may expect two light sources: First, the incandescent lamp, used where simplicity, cheapness and ruggedness are essential; second, gaseous discharge



# Science Discovers

## A MORE EFFICIENT WAY OF HANDLING AIR

**V**ENTILATING fans, for many years, have looked almost alike. They have been constructed with propeller type blades that resemble an airplane propeller or with curved paddle blades. Increases in capacities have been made by increasing the speed, increasing or decreasing curves and other changes of existing design.

This new American Blower Ventura Fan is a radical departure from all conventional designs—blades are neither airplane type nor paddle shaped. Yet, new standards of efficiency have been created. So much so that conventional fans, even though they are operating at their highest efficiency, can profitably be replaced with new Venturas.

Quietness in operation, too, has been developed to a point heretofore considered impossible. A new Ventura Fan calibrated by a machine that will record the noise created by the walking of a small cockroach, registers only from 38 to 42 decibels of noise at top speed. A laboratory without any humans in it and with all machinery

and equipment motionless, creates 20 decibels of noise.

Spring suspension, patented and designed by American Blower engineers, permits a full floating motor. A streamline inlet ring serves as both fan inlet and discharge outlet and further adds to the high efficiency of the unit.

Ventura Fans are now ready in various sizes to handle all tasks of ventilating or exhausting in stores, offices, restaurants, garages, factories and shops. Complete sales and advertising plans are ready, too, and here's your big opportunity to make money selling a fast moving, outstanding line of products. Send the coupon today for a copy of our new Blue Book. It contains complete advertising and selling plans—tells you where and how to make money. There's no obligation or cost.

**American Blower**

VENTILATING AND EXHAUSTING FANS FOR ALL INDUSTRIES AND RESIDENCES

(129)

AMERICAN BLOWER CORPORATION, 6000 Russell Street, Detroit, Michigan. BRANCH OFFICES IN ALL PRINCIPAL CITIES

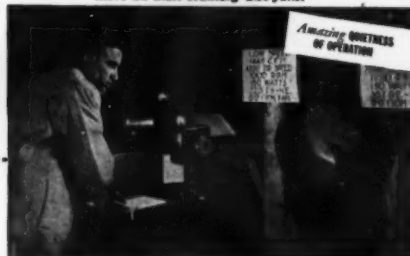
Please send a FREE copy of the 1934 American Blower Blue Book to:

Name \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_



G. C. Polk, Chief Engineer of the American Blower Corporation, watches a speed test on the new Ventura Fan. New scientific design makes possible the delivery of from 20% to 60% more air than ordinary disc fans.



The most sensitive noise recording instruments prove the new standards of quietness set up by this revolutionary ventilating fan. Patent No. 1491736—other patents pending.

# WIREMOLD

## "MONEY MAKERS"

**A lot  
of these  
fittings  
will now be  
used for fans**



**AND** there are many other Wiremold Fittings which will simplify the installation of summer-time conveniences.

This spells opportunity for the contractor who knows his Wiremold!

Step out of the crowd—be a Wiremold specialist—and keep busy.

The Wiremold Co., Hartford, Conn.



## PORTABLES

*that meet every requirement*

The eight portable lamp guards pictured here present only a portion of the extensive McGill portable guard line.

McGill Portables designed to meet every imaginable need, bring directed and protected light to **every job and every worker.**

McGill Portables perform a multiple duty; they guard light bulbs against breakage, and guard workers from the danger of serious injury. They protect workers from strain due to improper lighting conditions, and protect your invested dollars against unnecessary losses... Write for our interesting catalog describing the entire McGill line of portable lamp guards.

**Specialties**

- Pool Lights
- Marine Lights
- Security Lights
- Factory Lights
- Construction Lights
- Auto Lights
- Truck Lights
- Truck Horns

**McGILL**

**MANUFACTURING CO.**

*Electrical Specialties of Quality*

ESTABLISHED 1904

**VALPARAISO • INDIANA**

Box No. 670

**Specialties**

- Wire Lamp Guards
- Portable Lamp Guards
- Wall Guards
- Ceiling Guards
- Truck Guards
- Lamp Chimes

lamps, used where special lighting requirements arise.

As a matter of fact, contrary to general belief, there is no known law of physics which prevents the incandescent lamp from attaining efficiencies higher than those now obtained in general practice. Reports from England indicate that by the addition of Krypton the efficiency of the incandescent lamp has recently been increased 15 per cent. Thus, we may look forward to greater lighting efficiencies in the future.

### 2,600,000,000 C. P. IN FAIR SEARCHLIGHTS

The second season of the Chicago Century of Progress which opened on May 26 shows greater intensities of illumination than last year. Some statistics which indicate the part that electric illumination is playing at the Fair follow:

40 arc searchlights, total light output 2,600,000,000 candlepower.

1200 1,000-watt floodlight projectors.

2,200 200-watt projectors.

18 3-kilowatt incandescent searchlights, output for each 21,000,000 candlepower.

575 underwater floodlighting projectors with red, green, blue and amber projectors.

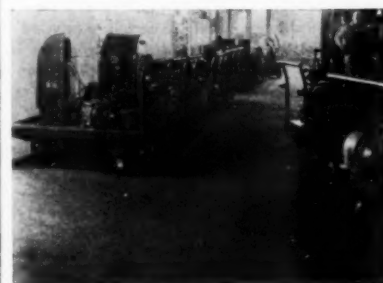
37 floodlights with clear lenses.

35 miles of neon, krypton, helium and mercury vapor tubes.

200,000 to 250,000 incandescent bulbs.

32 distinct types of street and floodlighting standards.

500 mushroom type lighting fixtures.



**FLOOR TRUCKS FOR HANDLING MOTORS:** The J & H Electric Co. of Providence, R. I., has in use over 150 floor trucks for handling all motor and electrical repair jobs in the shop. When a repair job comes in it is placed on a truck and is then routed from one department to another in that fashion.

# SANGAMO



—to serve these

**16**

## Contractor Markets

**N**OT only does SANGAMO make the outstanding quality Time-Switch but SANGAMO does an unusually efficient distribution job. More than 200 recognized electrical wholesalers in every distribution center in the United States carry SANGAMO Time-Switches in stock for you.

You can get a SANGAMO when you want it—no matter where you are—See your wholesaler when you want a SANGAMO Time-Switch—There's a SANGAMO wholesaler near you.



1. Oil burner control
2. Ice machine defrosting
3. Apartment house lighting control
4. Beacon lighting control
5. Floodlighting control
6. Airport lighting control
7. Traffic lighting control
8. Billboard lighting control
9. Electric sign control
10. Ventilation control
11. Display window lighting control
12. Poultry house lighting control
13. Blower operation control
14. Automatic stoker control
15. Motor control
16. Oil filter control

SANGAMO ELECTRIC COMPANY • SPRINGFIELD, ILLINOIS



## CLOSE VENTILATING JOBS with this book



Reviving business has opened many new and profitable opportunities for contractors to supply and install Diehl exhaust fans and ventilating equipment.

New and enlarged restaurants, grills and tap rooms, stores aiming to attract more buyers, industrial plants resuming former activity, homes needing improvements . . . all are your prospects.

This new Diehl booklet shows you exactly what equipment will meet any given requirement . . . enables you to bid right and to supply equipment backed by a half-century-old reputation for quality.

Write for the new Exhaust and Ventilating Fan Installation Catalog and, if you wish, details of the Diehl Sales Plan to the Diehl Manufacturing Company, Elizabethport, New Jersey. District Offices or Sales Representatives located in all principal cities.

**DIEHL MANUFACTURING COMPANY**  
Electrical Division of  
**THE SINGER MANUFACTURING COMPANY**



Send Diehl Exhaust and Ventilating Fan Installation Catalog:

Co. Name.....

Your Name.....

Address .....

## Letters to the Editor

### HOW IS IT THAT OTHERS CAN DO IT?

Editor,  
ELECTRICAL CONTRACTING.

A news item published in the ELECTRICAL CONTRACTING issue of May was to the effect that whenever the large electrical manufacturers' or wholesalers' associations find it desirable to evade an issue between them and other branches of the electrical industry they run to cover and wave the magic wand, the anti-trust act.

The article referred to a subject bulletined relative to establishing merchandise differentials to electrical contractors.

It must be conceded that not only brilliant lawyers could find employment with these master captains of our industry, but they also must possess convenient legal talent, as is so apparent in this instance. Quoting their attorney from the bulletin: "For a group to decide on such differentials and put them into effect would be contrary to the anti-trust act."

The very mysterious thought arising from this amazing legal opinion is, by what powerful influence do the manufacturers and wholesalers of clothing, furniture, plumbing fixtures, and many similar industries escape the vigilance of the federal departments of justice when they openly provide differentials to retail dealers in their respective industries?

The learned counsel is no less confusing, although convenient for his clients in his suggestion of a proper method of procedure, "by establishing provision for them in the supplemental code of the product classification."

WM. MCGUINEAS,  
President,

Electrical Contractors Association  
of the City of Chicago.

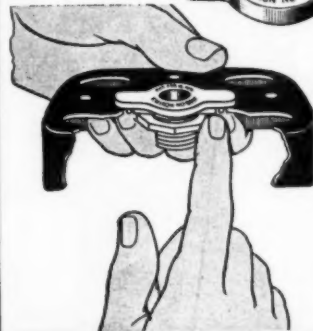
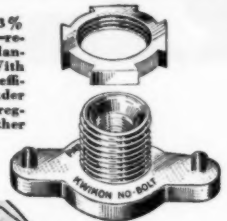
### G. E. METER CONSTANTS

Editor,  
ELECTRICAL CONTRACTING:

In the February issue of ELECTRICAL CONTRACTING is a very interesting article by E. M. McLaughlin, "Measuring Loads with Watt-Hour Meter." Technically Mr. McLaughlin's outline for computing loads with

## SAVE 83% of your installing time with the NO BOLT STUD

No Bolt Studs save 83% of installing time—remember that when planning your next job. With such a record of efficiency is it any wonder that No Bolt Studs regularly supplant all other types of studs?



SEND  
FOR  
SAMPLE

**KWIKON CO.**

626 W. Jackson Blvd. CHICAGO

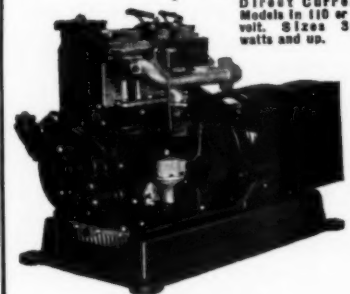
## A. C. ELECTRIC GENERATING PLANTS

The Sale of  
MODERN  
A. C. PLANTS  
brings calls for  
WIRING,  
FIXTURES,  
APPLIANCES,  
and  
EQUIPMENT

ONAN ALTERNATING CURRENT PLANTS operate on Gasoline, Gas or Diesel. COMPLETE, READY TO RUN. Built in sizes 300 to 50,000 watts. Supply 110 or 220 volt, 60 cycle, single or three phase current. For use where power lines are not available, for standby equipment, Public Address and Sound Car installations.

Operate A. C. Radio Washing Machines, Water-Pumps, Refrigerators, Motors, or any equipment operated from city current can be run on ONAN A. C. PLANTS.

D. C. Models as Low as \$99.00  
Direct Current Models in 110 or 32 volt. Sizes 300 watts and up.



Write for Details

**D. W. ONAN & SONS**  
289 ROYALSTON AVE., MINNEAPOLIS, MINN.



# LIGHTEN THE BURDEN

*... lest the service suffer!*

**I**T is not only the electric industry, its investors and personnel, that are threatened by the burden of mounting taxes, rising costs and concurrent action to force continuously lowered rates.

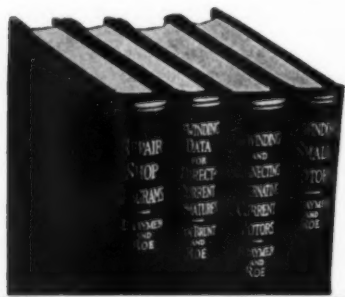
The ultimate sufferer necessarily will be the Electric Company's *capacity to serve* and its ability to maintain the high standard of service which the public rightly has learned to expect.

It should be the self-imposed duty of each company, locally, to present the facts to its customers; to make certain, as far as possible, that they are given the opportunity to exercise their intelligent choice in a matter that so vitally concerns the welfare of their homes, their industries, and the communities in which they live.

THE NEW YORK EDISON COMPANY

• BROOKLYN EDISON COMPANY, INC.

THE UNITED ELECTRIC LIGHT AND POWER COMPANY • NEW YORK AND QUEENS ELECTRIC LIGHT AND POWER COMPANY



## NOW—this ELECTRIC MOTOR REPAIR LIBRARY

tells how to handle all kinds  
of profitable repair and re-  
winding jobs

### Do you know how to:

- lay out a wave winding
- test a.c. and d.c. motors to locate grounds, shorts, opens, quickly and positively
- properly record data when stripping armatures so that it will be instantly usable for correct rewinding by yourself or any experienced winder at any time afterward
- determine how many coils can safely be cut out
- lay out single-phase fan motor windings
- change single-phase windings for two- or three-phase operation
- make cross or equalizer connections on lap windings
- lay out frog-leg windings
- handle every step in a rewinding job from the time it comes into the shop until it leaves
- wind stators for turbogenerators
- band high-speed armatures
- rewind motors for voltage, speed, frequency, or cycle changes
- etc., etc., etc.

1,079 pages of practical shop methods and data on jobs like these in this library. A complete, up-to-date key to repair of all motors. Nothing else in it; every page filled with definite, practical facts for the industrial maintenance man and the electric shop worker.

4 volumes, \$10.00, payable in  
easy monthly installments

THIS set of books should be on the shelf of every man who ever has to touch a motor for purposes of repairing it or changing it to meet different operating conditions. In shop language and with practical shop methods it covers every step in stripping, rewinding and connecting a.c. and d.c. motors of all kinds.

### How to change motors for different operating conditions

Here is all the information you need in order to determine what changes various types of motors permit; to lay out new windings for specified service conditions; and to handle every step in the work with satisfactory results. Covers all types of motors, from those used in small household and commercial appliances of all kinds, to mining and railway motors. Explains principles underlying the different types of windings; gives definite instructions for doing the various rewinding jobs. Also gives many data, tables and diagrams constantly needed by the repair man, including data difficult to get from any other sources.

### Low price—easy terms—10 days' examination on approval

Bought separately the books in this Library would cost you \$11. By using this coupon you need pay only \$3.00 in 10 days and \$2.00 monthly until the special price of \$10.00 is paid. In addition, we give you 10 days in which to examine the books. Send no money; simply fill in and mail the coupon now; let us know your answer after you have seen the books.

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Send Electric Motor Repair Library for 10 days' examination on approval. In 10 days I will send \$3.00, plus few cents postage, and \$2.00 monthly for four months, or return books postpaid. (We pay postage on orders accompanied by remittance of first installment.)

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(Books sent on approval in U. S. and Canada only.)

watt-hour meters is entirely correct, but in some instances the information so obtained might be exceedingly misleading.

He states that the watt-hour constant of the General Electric 5-ampere, 110-volt meter is .3, while as a matter of fact this value is correct only for the older types of G.E. meters. The modern types have a watt-hour constant of .6 and hence anyone attempting to use Mr. McLaughlin's formula in connection with a modern meter would underestimate the load to be measured by 50 percent.

Owing to the wide circulation which ELECTRICAL CONTRACTING has, I believe it would be well to call attention to the discrepancies indicated, with the suggestion that before attempting to use a watt-hour meter for measuring loads that the watt-hour constant should be definitely determined.

A. S. ALBRIGHT,  
Superintendent of Meters,  
The Detroit Edison Company.

### BOOK REVIEW

Fifty Reports on the Mechanical Transmission of Power From Motor Drive to Industry, by Robert W. Drake. Published by American Leather Belting Association, 41 Park Row, New York City.

This book of 224 pages covers the practical plant operation and maintenance of all kinds of motor drives, including multiple V belts, belting, chains and gears, as well as trouble elimination and practical information. It also contains studies of driven loads and how to belt them; studies of motors and motor loads and how to belt them; fundamentals of belt transmission; a comparison of short center drives; trouble jobs and how to lick them; modern group drives vs. individual drives; fan drives; wood working compressors and belt efficiency. Informative tables and charts, together with diagrams showing the different belt drives are shown, as well as tables giving safe recommendations of belt sizes required to successfully carry starting and running peaks under ordinary and severe operating conditions and throughout the complete range of driving and driven pulley diameters.

A copy of the book may be obtained from American Leather Belting Association at 25 cents per copy.

## BURNDY QIKLUG *No Solder!*



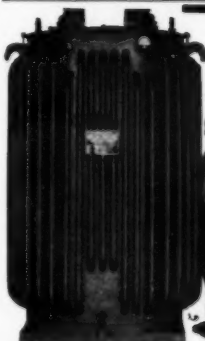
*Installed  
in a minute  
with only a wrench*

**BURNDY**  
ENGINEERING CO., INC.  
305 EAST 45TH STREET, NEW YORK  
*Agents Everywhere*

## SPECIFY "Latrobe"

FLOOR BOXES—ACCESSORIES  
"BULL DOG" INSULATOR SUPPORTS  
"KEYSTONE" FISHWIRE  
CONDUIT BENDERS

All manufactured by Fullman  
Mfg. Co. and carried in stock  
by over 300 jobbers—Send for  
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FULLMAN MFG. CO. - LATROBE, PA.



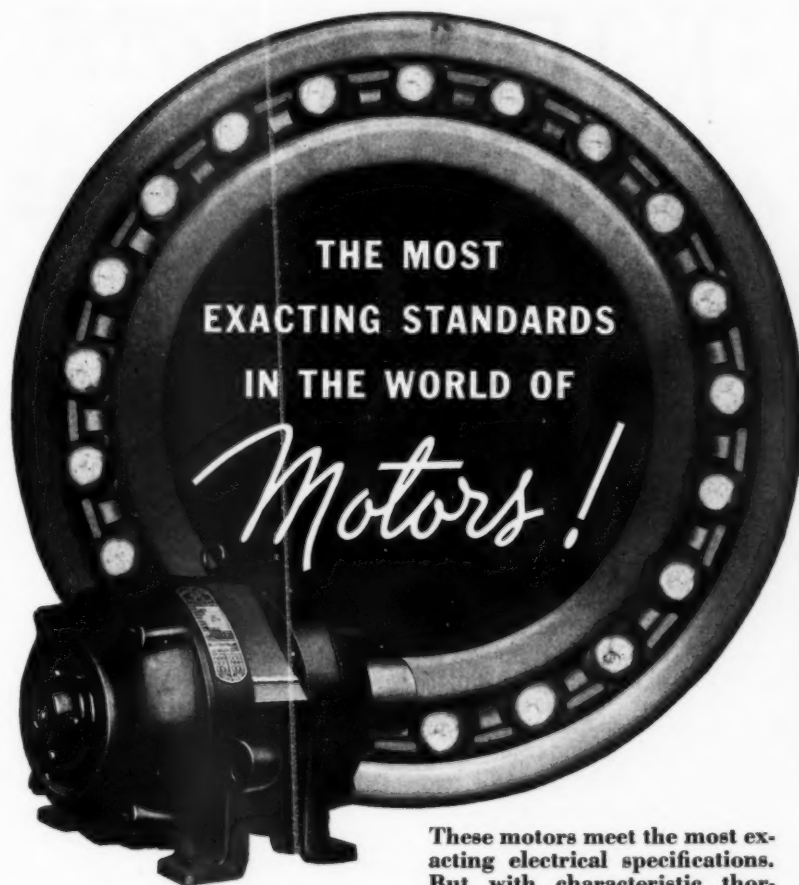
"Standardize on  
**STANDARD**  
Transformers"

ALL TYPES  
Indoor and  
Outdoor  
Service

Send for  
Descriptive  
Bulletin

**STANDARD TRANSFORMER CO.**  
Warren ..... Ohio





... you get more features with F-M Motors

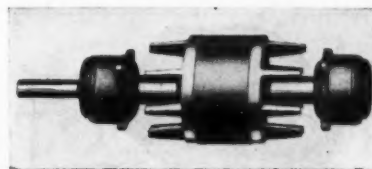
The best product wins! Today, purchasers are exacting—they scrutinize values. Features count heavily. The more outstanding features, the better your chances of turning a prospect into a customer.

You get more with which to sell when you equip your product with F-M Motors. A long list of F-M proven and accepted features become features of your product when you include this motor.

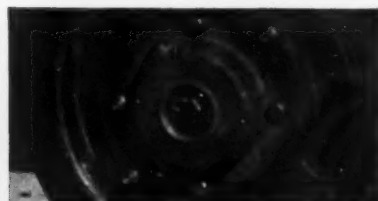
These motors meet the most exacting electrical specifications. But with characteristic thoroughness, Fairbanks-Morse has achieved a position of leadership in *mechanical construction*.

Fairbanks-Morse pioneered *mechanical excellence* in electric motors. It pioneered *ball bearings*, *grease tube lubrication*, *one-piece rotor construction*.

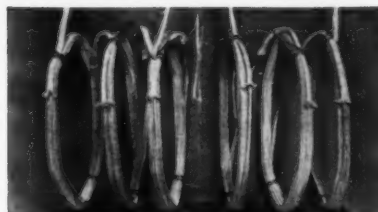
Pioneers in motor building progress, Fairbanks-Morse asks only an investigation of how much *more* these motors have to offer. Start your investigation by writing for full information. Address Fairbanks, Morse & Co., 900 S. Wabash Avenue, Chicago, Ill.



Complete rotor assembly with cartridge-type sealed ball bearings. Note rotor winding is of one-piece construction.



Lubricate sealed ball bearings once a year with tube contained lubricant. Bearings, dust-tight. No lubrication drip.



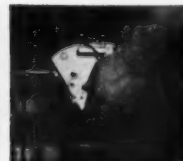
Group wound coils—an entire phase group in a single piece of wire—lead connections from each group welded, not soldered or brazed.



Sealed-in leads through frame opening—anchored permanently. No chance for strain on field leads.



Slot insulation — self locking by means of cuff construction — permanent and additional protection for field windings.



Final vibrometer test —one of a series to insure a smooth running motor with minimum vibration.

Pioneer  
Designers  
and  
Manufacturers  
of



# FAIRBANKS-MORSE MOTORS

POWER, PUMPING AND WEIGHING EQUIPMENT

104 Years

6055  
EA46.6



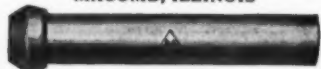
### For Residence Wiring

The Best and Safest Method is a properly installed KNOB and TUBE job. Be sure and get the

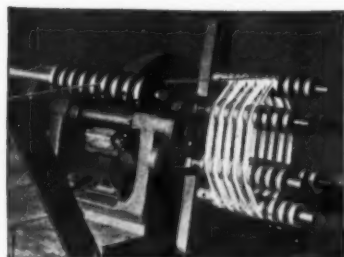


Assembled Knob because it "HAS A GRIP LIKE ITS NAMESAKE."

ILLINOIS ELECTRIC PORCELAIN CO.  
MACOMB, ILLINOIS



## new... IDEAL COIL WINDER HEAD



### LOW COST - UNIVERSAL

For making most any coils (diamond or mush, loops, round, square or rectangular) for motors, armatures, fields, transformers, etc. Primarily intended for from 1 to 50 H/P motors. Maintenance or production work. Eliminates expense and delay of making special forms. Quickly reset to meet various coil shape or size requirements. Speed operation—set of 48 diamond coils made in from 30 to 45 minutes, typical. No solid side walls, permitting tape lacing of coil while still on head. Face plate fits any lathe head or other turning device. Mail the coupon today for 10 DAY FREE TRIAL or literature.

IDEAL COMMUTATOR DRESSER CO.  
1041 Park Avenue, Sycamore, Ill.

Gentlemen: Please send us

- ☐ IDEAL Coil Winder Head on 10 day trial.  
☐ Literature and low prices.

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Address.....

City.....

State.....

# NEWS MANUFACTURERS

A DEPARTMENT FOR THE ANNOUNCEMENT OF ACTIVITIES OF MANUFACTURERS THAT ARE OF INTEREST TO CONTRACTORS, SUCH AS CHANGES IN EXECUTIVE PERSONNEL, BRANCH OFFICES, NEW PRODUCTS, ETC.

### MERRILL FORMS NEW CONDUIT FITTINGS COMPANY

The Simplet Electric Company, with offices and factory at 5100 W. Ravenswood Ave., Chicago, Ill., has been organized by Frank H. Merrill, to manufacture a line of conduit fittings to be known as "Simplets."

Mr. Merrill was connected with the Appleton Electric Co. for thirty years and at the time of his resignation was vice-president in charge of Eastern sales and also a director of the company. He will have associated with him his brother, Arthur S. Merrill, as treasurer, who was, for many years, connected with the Chicago Fuse Manufacturing Co. as general sales manager and who has been acting in the same capacity for the Appleton Company for the last twelve years, in addition to being director of the company.

A. S. Merrill will be located in the Chicago office and F. H. Merrill at 527 West 28th St., New York City.

### ROBINSON NEW CRESCENT SALES MANAGER

E. L. Robinson, formerly factory manager, has been appointed sales manager of Crescent Insulated Wire and Cable Company, Trenton, N. J., succeeding the late A. A. Neumann. H. E. Gaskill has been appointed assistant sales manager.

### CHASE ANNOUNCES NEW FIXTURE LINE

A new line of lighting fixtures in Early English, Early American, Georgian, Empire, Federal, Classic, Modern and American adaptations has been announced by the Chase Brass & Copper Company. It is proposed to sell the line through franchised representatives under an installment selling plan.

### JOHNS-MANVILLE ANNOUNCES NEW UNDERGROUND CONDUIT

Johns-Manville, New York City, announces that it is no longer sales agent of the Fibre Conduit Co., and instead is offering a new type of electrical conduit known as Transite.

Transite conduit is made of asbestos fibre and portland cement, combined under high pressure into a tough, homogeneous structure. It is fireproof, highly corrosion-resistant and immune to electrolysis. Because of its high mechanical strength, it can be used as a cable subway without a concrete envelope.

Conduit is furnished in sizes 2 in. to 6 in. in 5 ft. and 10 ft. lengths.

### ALVIN A. NEUMANN

Alvin A. Neumann, sales manager of Crescent Insulated Wire and Cable Company, died on May 14 from a fractured skull received in an automobile collision on the previous day.

### HARRY WARNER BLIVEN

Harry Warner Bliven, for many years sales manager for the Harvey Hubbell Company, Bridgeport, Conn., electrical equipment manufacturers, died at Yonkers, N. Y., on April 27. He had made his home lately at the Fraternity Club in Manhattan.

Mr. Bliven was born in Windham, Conn.

A son, Harry Bliven of Newton, Mass., survives.

### Classified Advertisement

**Position Wanted:** Electrical estimator and sales engineer with 20 years' experience desires connection with a high-class organization that will appreciate loyal and sincere efforts. Can produce if given an opportunity. Address Box 634, Electrical Contracting, 520 North Michigan Ave., Chicago, Ill.

# ANNOUNCING

## A NEW G-E OPEN-TYPE FLOODLIGHT

### As Low as \$12.<sup>00</sup>

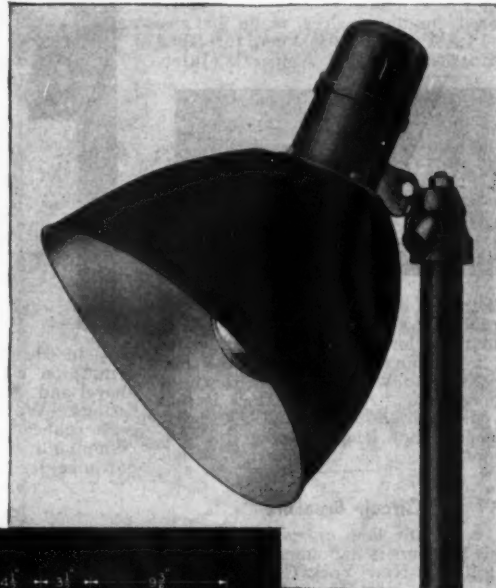
**H**ERE is the floodlight you may be looking for. It is the new General Electric low-priced, open-type floodlight—ideal for all outdoor lighting where the permanence of the installation does not justify more expensive copper-bronze units. Built into this floodlight are the same qualities of material and workmanship that are found in other standard G-E floodlights.

This new floodlight

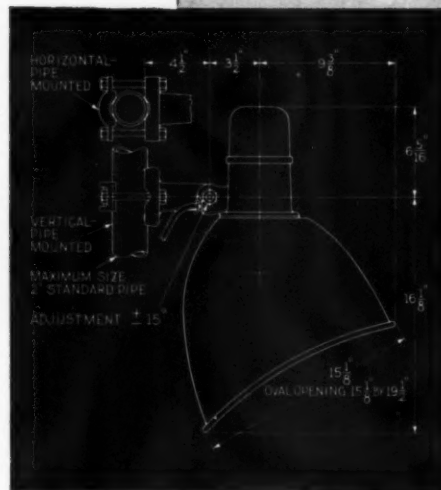
- can be used with lamps ranging from 300 watts to 1500 watts.
- is available with any one of six different mountings (in addition to the three popular types shown here are the cross-arm the swivel-and-stand, and the swivel-and-rocker mountings).
- is easy to clean (soap and water will restore the white-enamelled reflector to its original condition).
- is constructed of heavy sheet steel, finished with a double coat of baked enamel.
- gives an even distribution of light over a large area.
- has a net weight of 11 lbs.
- is adaptable to the lighting of gasoline service stations, parking areas, recreational facilities, etc.

The price to the contractor is \$12.00 for the new floodlight with the cross-arm mounting, \$13.20 with other externally wired mountings, and \$14.70 with internal wiring. (The price includes delivery, but does not include the cost of the lamp bulb.)

We suggest that you purchase one or more of these units for display purposes or for rental.



The new AL-45 open-type floodlight with the pipe-cap mounting



Dimensions of the new flood-light with pipe-clamp mounting

# GENERAL ELECTRIC



General Electric Company  
Department 6A-201  
Schenectady, N. Y.

Date.....

Please send me an initial shipment of \_\_\_\_\_ units of the AL-45 floodlight with  
( ) pipe-cap mounting, ( ) pipe-clamp mounting, ( ) internally wired mounting,  
( ) cross-arm mounting.

NAME.....

STREET.....

CITY..... STATE.....

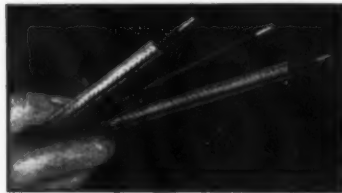
500-98



# June New Products

## Rubber Covered Wire

The American Steel & Wire Co., Chicago, Ill., announces "Safecote" rubber covered building wires made in size No. 18 AWG to 2,000,000 cm., furnished in Americore (Code), Amparak (Inter-



mediate), and Amerite (30%) grades of rubber. Wire can be supplied in standard colors. Manufacturer states that an important feature is the fact that Safecote wires will not carry or support flame. Another feature is that the colors do not fade and are easily cleaned if they become soiled.

## Circuit Breakers

A complete line of explosion-proof circuit breakers is announced by Russell & Stoll Co., New York City, in capacities ranging from 15 to 600 amp. and up to 600 volts a.c. Units are trip free; have front operation allowing re-



cessing in machinery or close banking; time lag; double pole breakers, and short circuit. Housing has heavy wall sections and accurately machined surfaces and joints. Marking on cover and position of operating handle make it possible to tell at a glance whether breaker is in "On," "Off" or "Tripped" position.

## Floodlights

A floodlighting projector made especially for filling station and sports lighting has been placed on the market by General Electric Co., Schenectady, N. Y., known as type AL-45. Floodlight is made of porcelain-enameled steel with cap fittings of cast aluminum, and has a weather-resistant, glossy white, fire-baked porcelain-enamel reflecting surface. Projector has a green enamel exterior. Mountings are of cadmium-plated malleable iron. All sizes of large lamps, from 300 to 1500 watts, may be used by utilizing an easily adjusted socket support. Floodlight



may be flexibly mounted with cross-arm, pipe clamp, pipe cap, pipe top, swivel and stand and swivel and rocker fittings. Water-tight bushings of brass with rubber gasket, brass packing and clamping nut prevents leakage around entrance leads.

## D.C. Motors

Type RD motors, direct-current, compound-wound, are announced by Wagner Electric Corp., St. Louis, Mo., as a companion line to its alternating-current motors. Type RD motors are fundamentally the same in appearance,



design and construction as the type "A" motors, with the exception that commutator is horizontal instead of vertical; brushes in brush assembly do not lift as in type "A"; stator has salient poles with no slots in laminations, and commutator-end endplate has two covers to afford access to the brushes. Motors can be had in fractional h.p. and also 1 h.p. in speeds 1725 r.p.m. and lower.

## Indicating Fuse Plug

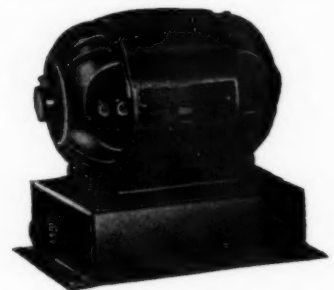
An indicating fuse plug known as Eagle Eye O.K. fuse has been placed on the market by Eagle Electric Mfg. Co., Brooklyn, N. Y. Unit has an insulated disc with the letters O.K. printed on it placed underneath the link. The



narrow central blow point is chemically treated and when fuse blows, gases generated blot out the O.K. adjacent to it and the O.K. vanishes. Manufacturer states that because of the nature of construction of unit the heat is not dissipated into body of the fuse but stored right at top between mica and insulated O.K. disc. O.K. disc proper is colored differently for every amperage such as rose, green, blue, lavender and orange.

## Konverters

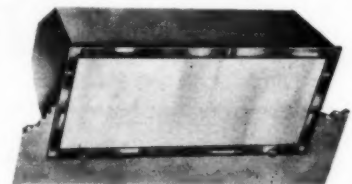
The Kato Engineering Co., Mankato, Minn., has added to its line of rotary Konverters a vibrator type which will operate an a.c. radio set with rated consumption of 70 watts on a drain of



slightly over 2 amps. Konverter is furnished with an instruction manual which enables the user to make vibrator point adjustment or replacement. Manufacturer claims that tests on vibrator indicates an approximate life of 2000 hours. Other rotary konverters range in capacity from 100 to 5000 watts. Machines with double or booster wound armature are optional. Konverters can also be furnished with a filter to eliminate radio interference making them suitable for operating a.c. radio sets.

## Flush-Type Panel Units

Standard flush-type panel units in three sizes, five lengths to each size, are announced by Day-Brite Reflector Co., St. Louis, Mo. Units have steel or bronze hinged frames; porcelain enamel



reflecting surface; single or twin porcelain sockets, and steel boxes furnished with four ½ in. knockouts, one in each end and one on top at each end. All but single socket fixtures are furnished wired with No. 14 slow-burning wire. Steel frames are finished in any standard lacquer spray finish, and bronze frames in any standard oxidized plated finish, natural bronze, nickel and chromium.

Electrical Contracting, June, 1934



## THE SUCCESSFUL CONTRACTOR

In planning for the future Contractors cannot place too much dependence upon increased volume as the sole producer of Profits. This is no time to base profits on hoped-for volume. Consistent profits on the volume of business now obtainable is a safer way to progress. It is no longer a question of your desire to operate your business PROFITABLY—it *must be done*.

### STEER A SAFE COURSE

Why not profit from the experience of hundreds of successful contractors and dealers who have for years depended upon the NATIONAL RESALE PRICE SERVICE as a safe guide to fair prices and profits—fair to themselves as well as their customers?

### A PROFITABLE INVESTMENT

Don't dismiss the possibilities of this unusual Service until you have investigated. We will gladly send full details without obligation of course. Please attach the coupon to your letterhead as the Service is only supplied to those actively engaged in the business.

Henderson-Hazel Corporation,  
5005 Euclid Avenue, Cleveland, Ohio.

Gentlemen:

Without obligation please send us complete details on the NATIONAL RESALE PRICE SERVICE.

Name.....

Address.....

City..... State.....

E. C. 6-34

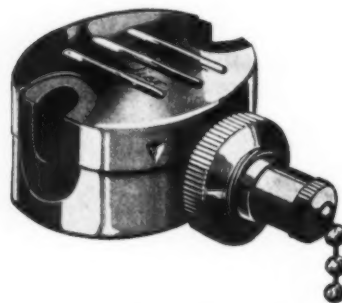
# June New Products

## Three Circuit Socket

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has developed a three circuit lamp socket especially adaptable for use with the three light lamps, which is applicable for stores, shops, auditoriums, show



windows, factories, storerooms and other places where different levels of illumination are desired. Unit is quite similar in outward appearance to the present mogul porcelain socket, but the interior has been redesigned to provide a floating center contact for the high wattage lead, supported by a coiled steel spring. Surrounding contact is a ring contact for the low wattage lead and standard shell provides common lead. The terminals on the back of socket are arranged in deep cavities with large binding head screws to make wire connections. Polarity is denoted by screw shell terminal being nickel-plated. Supporting screw spacings are standard and it can be substituted for the present mogul socket directly.



## Three Light Levolver Switch

The McGill Manufacturing Co., Valparaiso, Ind., announces Levolver No. 201, a two-circuit switch for three-light lamps. Size of unit is identical with No. 61, and incorporates all of the features of Levolver switches, being simple in design and easy to install.

## Fish Wire Puller

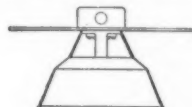
A fish wire puller known as the "Steel City Red Head Fish Wire Puller" has recently been placed on the market by Steel City Electric Co., Pittsburgh, Pa.



Puller was designed to take the place of ordinary pliers and other similar tools used by the electrician when fishing wires through conduit. Manufacturer claims that the puller will not damage the fish wire, but leaves it in its original condition so that it can be used again on other jobs.

## Lighting Fixture

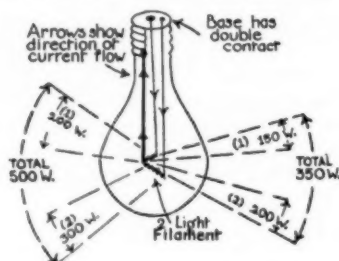
Day-Brite Reflector Co., St. Louis, Mo., announces "Stacklite," a lighting fixture for illumination of library bookshelves, stockbins, record rooms, storage shelves of all kinds. Fixture is made entirely of steel, porcelain enameled. All exposed surfaces are white. Manufacturer states that the carefully designed shape of reflector, the embodying of the flat top diffuser and the use of white porcelain enamel combine to make it the ideal illumination unit for this type of installation. Unit works with standard 40, 50 or 60 watt lamps, and the flat top diffuser allows installation at any desired height. Unit consists of an apron shade fashioned in the form of a double truncated cone, open at top and affixed by means of four slender arms to a reflecting diffuser of wide diameter. Dimensions of unit are, top diffuser, 13½ in. in diameter; shade, 9 in. diameter at opening. Unit is 5¼ in. high, and overall height, 6 in.



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## Three-Light Lamp Fixtures

Curtis Lighting, Inc., Chicago, Ill., announces a line of luminaires available with two circuit socket for three-light incandescent lamps. Included in the series are luminaires with chain or



Courtesy - Curtis Lighting, Inc.

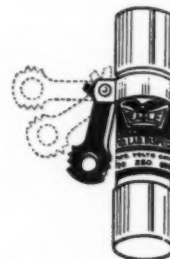
rod hangers used for commercial interiors, which are finished in an ivorystone, brushed silvertone, satin silver or satin aluminum. Several of the luminaires are of louvered construction that give the conventional type of general illumination and permit tinting of louvers in the bowl in pastel shades of colored light.

## Radio Noise Locator

Tobe Deutschmann Corp., Canton, Mass., announces Model 233 radio noise locator. Unit is contained in a riveted aluminum cabinet with weather-resisting, black baked-enamel finish. Hinged covers allow easy access to battery compartment, and also protect control panel



when instrument is not in use. Unit also has a carrying strap of webbing. The controls required for operating unit are noise selector and volume adjuster, and these controls together with various switches, meters and jacks are located on top panel. All circuits are completely shielded, and both plate and grid circuits are filtered and by-passed to permit any interaction between circuits or any pick-up of noise or signal in instrument wiring. Sensitivity of instrument is comparable to that of a socket-power operated receiver and is approximately 2 microvolts absolute over the band from 500 to 1700 kilocycles. A 4-stage TRF amplifier using screen grid tubes is instrumental in providing the requisite sensitivity, which is further increased by use of a two-stage audio amplifier with pentode output tube. Dimensions of unit are 12 in. long, 12 in. high and 7½ in. wide, and weighs 21 lbs. when fully equipped and ready for operation.



## Cartridge Fuse

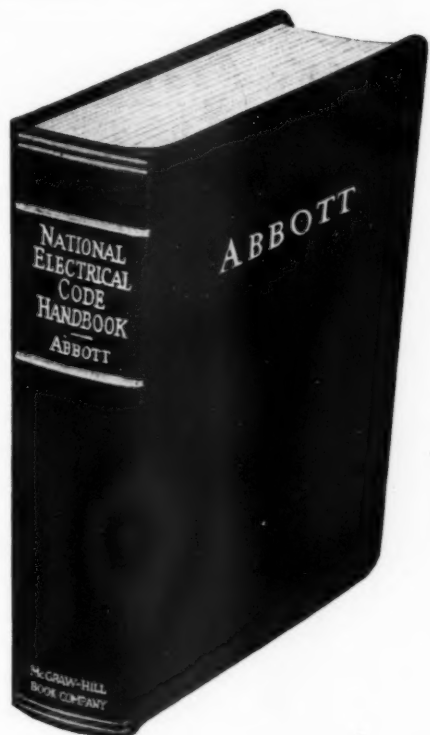
Eagle Electric Mfg. Co., Brooklyn, N. Y., has improved its line of cartridge fuses by equipping the fuse with a handle, fuse to be known as Eagle E-Z pull cartridge fuse. Handle is placed to one side of the fuse, and it swings out with plenty of leverage for pulling fuse. When not in use, handle hangs out of the way. Handle has a cam action which manufacturer claims positively prevents handle swinging past center, and is supplied as standard on all 30 and 60 amp. class cartridge fuses.

Electrical Contracting, June, 1934



## Just Published! New Second Edition covering latest Code rules

**Simplifies and explains  
the National  
Electrical Code**



### Valuable data for the electrician, inspector, contractor and architect

- definitions of the terms used in the Code
- types of wiring approved under given conditions
- requirements pertaining to standard materials and apparatus and to the standard methods of installing such materials and apparatus
- general requirements applying to all wiring systems
- automatic overload protection covered both in section on general requirements and in connection with specific applications
- simplified application of Code data pertaining to motor installations
- special requirements pertaining to outside work, hazardous locations, theatre wiring, emergency lighting, high-voltage installations, etc., etc.

Here is a complete revision of Abbott's useful Handbook, covering all changes, new rules, etc., in the latest National Electrical Code. Use this book to get work done according to the Code. Gives rules and requirements for all jobs—what they mean—how to apply them. This unusual book, planned for quick reference use by busy, practical men can also be used by anyone who wishes to make a thorough study of the National Electrical Code.

## Abbott's National Electrical Code HANDBOOK

by Arthur L. Abbott

Second edition, 523 pages, 5½x8, fully illustrated, \$3.00

**T**HE purpose of this book is to enable the user to grasp readily the plan, scope and purpose of the National Electrical Code requirements, to present discussions of the rules wherever this will clarify them, and to make the practical application of the rules clear and easily understandable.

All requirements of the Code are included in this Handbook but have been grouped according to the subjects to which they apply. For instance, if you want to know the rules for wiring under certain conditions you can be sure that all of these are included in Section II of the Handbook. At the same time some of them are repeated in other sections in connection with more specific jobs. By this special arrangement you can refer to any point quickly with the assurance that no rule applying to the subject will be overlooked.

Every Code rule has been made clear and understandable. Comments, explanations, diagrams and sketches have been inserted wherever they are needed. Some rules have been restated where the meaning could be brought out more simply.

### 10 Days' Examination on Approval

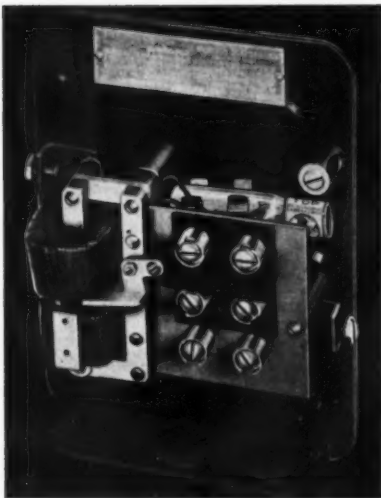
This book will help you to certify your methods by making quick, frequent, definite reference to Code requirements an easy matter. See for yourself this unusual book. Let us send it for 10 days examination. Base your decision on the book itself. Send the coupon now.

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Send me Abbott's National Electrical Code Handbook for 10 days' examination, subject to approval or return. At the end of 10 days I agree to pay \$3.00 plus a few cents for postage and delivery, or return the book postpaid. (We pay postage on orders accompanied by remittance.)	
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Company .....	EC-6-34 (Books sent on approval in U. S. and Canada only.)

# MERCOID TRANSFORMER RELAY

With Sealed Mercury  
Contact and Low Voltage  
Pilot Circuit

Quiet in Operation  
Easy to Install



The Mercoide Transformer-Relay is a very simple and compact device which is in principle a low voltage transformer, but also operates as a repulsion relay.

It meets the severe service conditions encountered with frequently operating automatic equipment such as oil burners, stokers, air conditioners, electric heaters, refrigeration machines, air compressors, pumps, traffic signals, etc. It is also adaptable for many other applications requiring a thoroughly dependable remote control.

The pilot circuit to this relay can be operated automatically by any two-wire low voltage device, such as a thermostat, humidistat, pressure, temperature or fluid level control, or can be operated manually by a remote push button or snap switch. Color to color wiring is not required.

The operation of the Mercoide Transformer-Relay is distinctly different from that of the conventional clapper type relay. There is no noise or residual magnetism to affect the operation. Try this transformer-relay on your next job and note the many advantages this device will give you.

Further information may be had by writing for Bulletin No. 110.

*Mercoide Controls Are Distributed and Stocked in Many Cities By The Graybar Electric Co., Inc.*

**THE MERCOIDE CORPORATION**  
Sole Manufacturers of The Mercoide Switch  
4223 Belmont Avenue - Chicago, Illinois

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# SHERMAN RIGID GROUND FITTINGS

Approved

The SHERMAN Rigid Ground Fittings are made to give you perfect conductivity, ease of installation and great flexibility—Can be used with flexible wire, bare wire or rigid conduit. Made for both soldered or solderless installation.

**6 Fittings to Fill  
Any Requirement**

GF1. Solderless Fitting for Rigid Conduit — With Brass Washer.  
GF2. Solder Fitting for Rigid Conduit — With Soldering Lug.  
GF3. Solder Fitting for Bare Copper Wire — With Soldering Lug.  
GF4. Solder Fitting for Rigid Conduit — With Soldering Lug.  
GF5. Solderless Fitting for No. 8 and No. 10 Bare Armored or Un-armored Ground Wire.  
GF6. Sherman Meter Shunt.



Order From  
Your Jobber

A solderless fitting for bare or insulated wire — handles sizes ranging from No. 4 stranded to No. 6 wire — Tight contacts with any size.

**H. B. SHERMAN MFG. CO.**  
BATTLE CREEK, MICHIGAN

## MINERALLAC STATISCOPE

Indicates the presence of potential on high voltage lines.

Indispensable for locating static charges on

## BELTING

in paper, grain and textile mills.

Write for Bulletin  
No. 155

**MINERALLAC  
ELECTRIC COMPANY**  
25 North Peoria Street  
CHICAGO





## "That's the Range Switch for Our Customers!"

"I'm glad you are using Square D Range Switches. There are some other good switches which meet our specifications, but, everything considered, Square D is my preference."

"We want this range campaign to be a success. We want satisfied and enthusiastic customers on our lines. We don't want any question about the quality of the electrical equipment. Everyone knows Square D Switches and has confidence in them."

There are many reasons why the electrical contractor should install Square D Combination Range Switches exclusively. They are approved by all public utilities. Where desired, they are available with solderless connectors. They are obtainable from Square D distributors everywhere and for every sequence to meet the local power company regulations.

The contractor's greatest asset is successful installations and satisfied customers. It's safer to use Square D.




# SQUARE D COMPANY

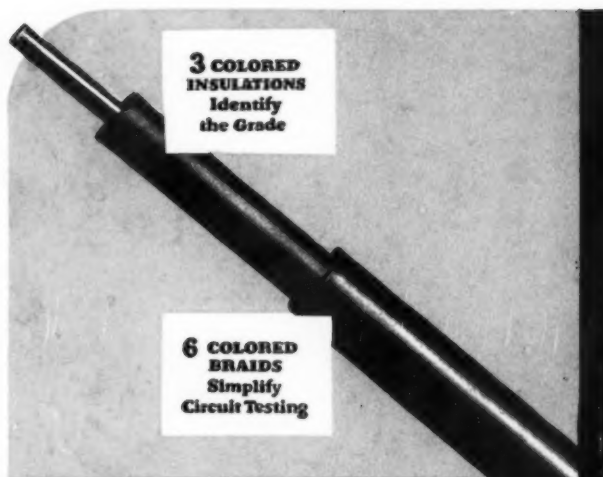
DETROIT USA MILWAUKEE  
MICHIGAN WISCONSIN  
SQUARE D COMPANY, INC., LOS ANGELES, CALIFORNIA



**SQUARE D  
COMBINATION RANGE SWITCH 34352**

Is an accessible main fuse 60-Ampere switch—115-230 Volts A. C.—3-pole solid neutral, with 60-Ampere FUSE  BREAKS in both the mains and the range circuit, together with four 30-Ampere lighting branches.





## G-E CODE WIRE

### Is Uniform— Easy to Pull

You can get the maximum number of wires per conduit by using G-E Safecote. It is uniform in size—diameters are the minimum allowed by the code—every coil is tested and exceeds code requirements.

G-E Safecote braid is smooth and tough. It pulls easily. For immediate delivery, phone a G-E Merchandise Distributor or write Section CDW-196, Merchandise Department, Bridgeport, Connecticut.

### CODE WIRE

## New G-E Double-Duty Convenience Outlets

General Electric announces a new line of duplex, 3-pole, twin convenience outlets.

Double-Duty outlets\* for permanently grounded circuits.

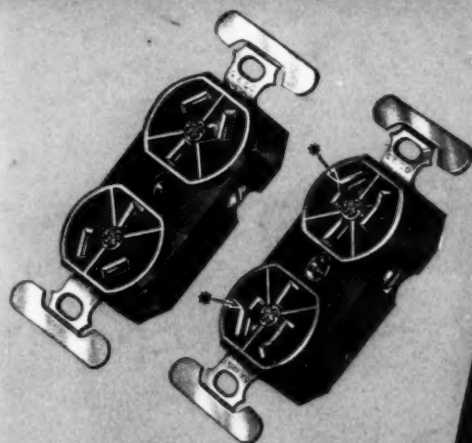
Double-Duty outlets\* for ungrounded circuits — binding screw terminal for separate ground.

Three-pole outlets for straight 3-wire circuits.

\* May also be used for straight 2-wire circuits.

For further information on G-E Wiring Devices and for immediate delivery, telephone a G-E Merchandise Distributor or write Section CDW-196, Merchandise Department, General Electric Company, Bridgeport, Connecticut.

### WIRING DEVICES



## G-E WHITE Resists Water, Oil, Acids and Alkalies...

The mild steel in G-E White Conduit bends, cuts and threads easily. Both inside and outside surfaces are protected by two layers of zinc—hot-dipped galvanized. Added coatings of glass-like Glyptal, inside and out, give further protection against water, oil, acids and alkalies.

G-E White is economical—easy to use. It proves itself in service. For immediate delivery, call a G-E Merchandise Distributor or write Section CDW-196, Merchandise Department, General Electric Company, Bridgeport, Connecticut.

### RIGID CONDUIT



# GENERAL ELECTRIC

MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONNECTICUT

